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(12) **United States Patent**
Fukuda

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(54) **INFORMATION PROVIDING APPARATUS, PORTABLE INFORMATION TERMINAL, CONTENT PROCESSING DEVICE, DEVICE CONTROL APPARATUS, CONTENT PROCESSING SYSTEM AND PROGRAM**

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

H04N 21/00	(2011.01)
H04N 7/173	(2011.01)
H04H 60/32	(2008.01)
H04H 60/46	(2008.01)
H04H 60/72	(2008.01)
H04H 60/91	(2008.01)

(Continued)

(52) **U.S. Cl.**

CPC ***H04N 7/17318*** (2013.01); ***H04H 60/32*** (2013.01); ***H04H 60/46*** (2013.01); ***H04H 60/72*** (2013.01); ***H04H 60/91*** (2013.01); ***H04N 7/165*** (2013.01); ***H04N 21/254*** (2013.01); ***H04N 21/25891*** (2013.01); ***H04N 21/2668*** (2013.01); ***H04N 21/4126*** (2013.01); ***H04N 21/4227*** (2013.01); ***H04N 21/4828*** (2013.01)

(58) **Field of Classification Search**

CPC H04N 21/60

USPC 725/39

See application file for complete search history.

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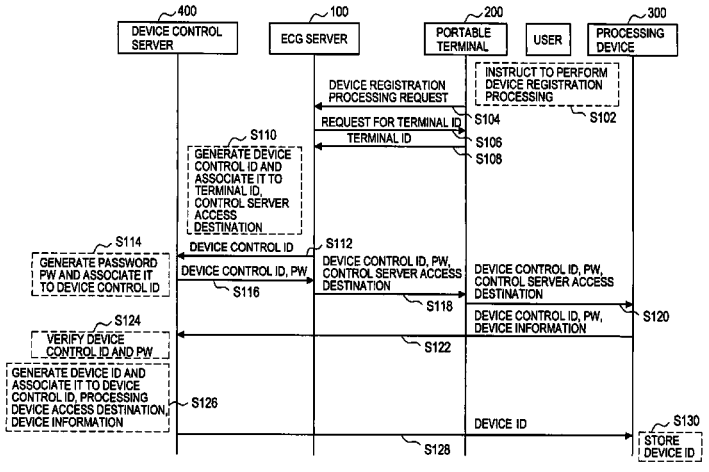
(57) **ABSTRACT**

A content list including contents processable by a designated processing device, among the contents to be processed including a specific content managed with respect to each user, is received by a portable terminal from an ECG server, and a content is selected by a user. Then, a processing request for the selected content is transmitted from the portable terminal to the designated device via the ECG server and a device control server, and unit information of the selected content is acquired by the portable terminal and displayed or reproduced. A user can thereby use the content and the unit information by selecting the content using the portable terminal without depending on the content and the processing device.

18 Claims, 19 Drawing Sheets



(51) **Int. Cl.**

H04N 7/16	(2011.01)
H04N 21/254	(2011.01)
H04N 21/258	(2011.01)
H04N 21/2668	(2011.01)
H04N 21/41	(2011.01)
H04N 21/4227	(2011.01)
H04N 21/482	(2011.01)

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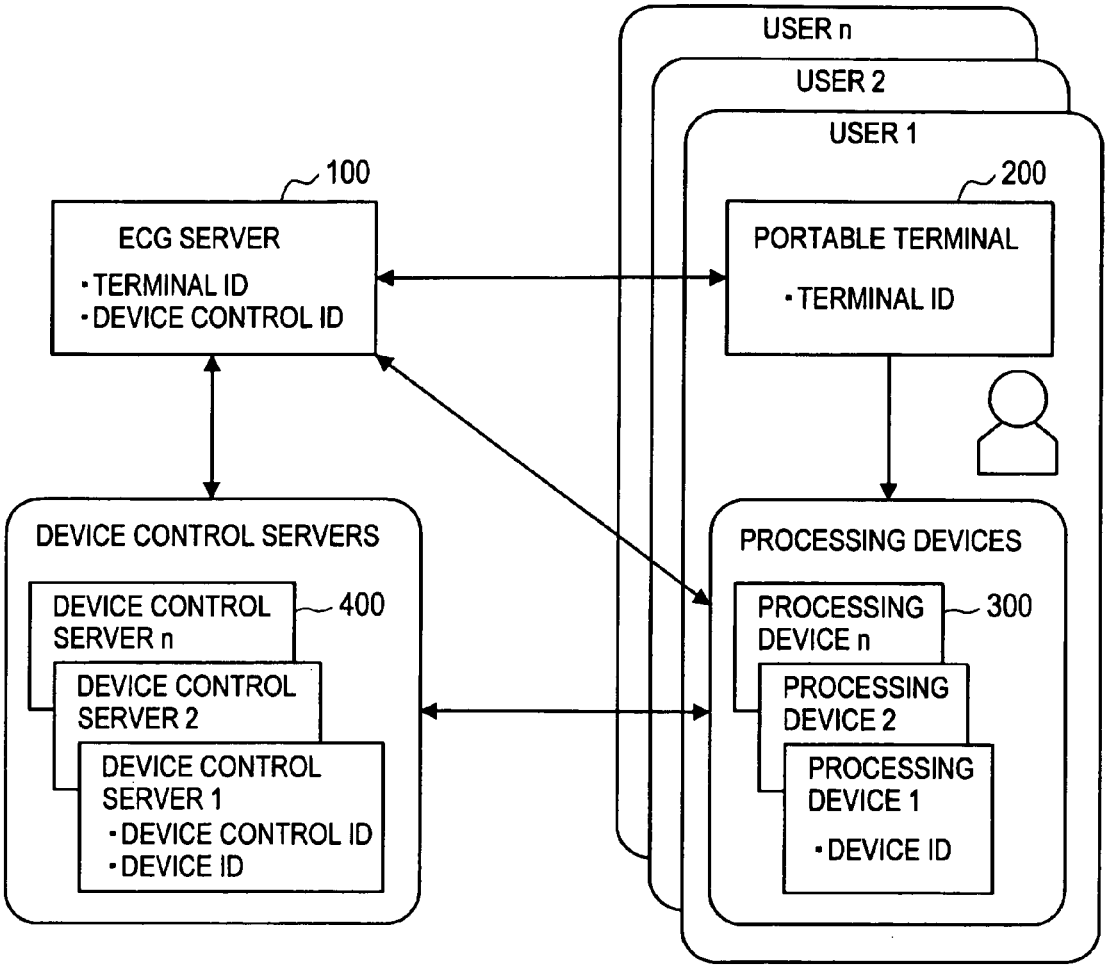
FIG.1


USER n
USER 2
USER 1
100
ECG SERVER
• TERMINAL ID
• DEVICE CONTROL ID
200
PORTABLE TERMINAL
• TERMINAL ID
DEVICE CONTROL SERVERS
DEVICE CONTROL SERVER n
400
DEVICE CONTROL SERVER 2
DEVICE CONTROL SERVER 1
• DEVICE CONTROL ID
• DEVICE ID
PROCESSING DEVICES
PROCESSING DEVICE n
300
PROCESSING DEVICE 2
PROCESSING DEVICE 1
• DEVICE ID

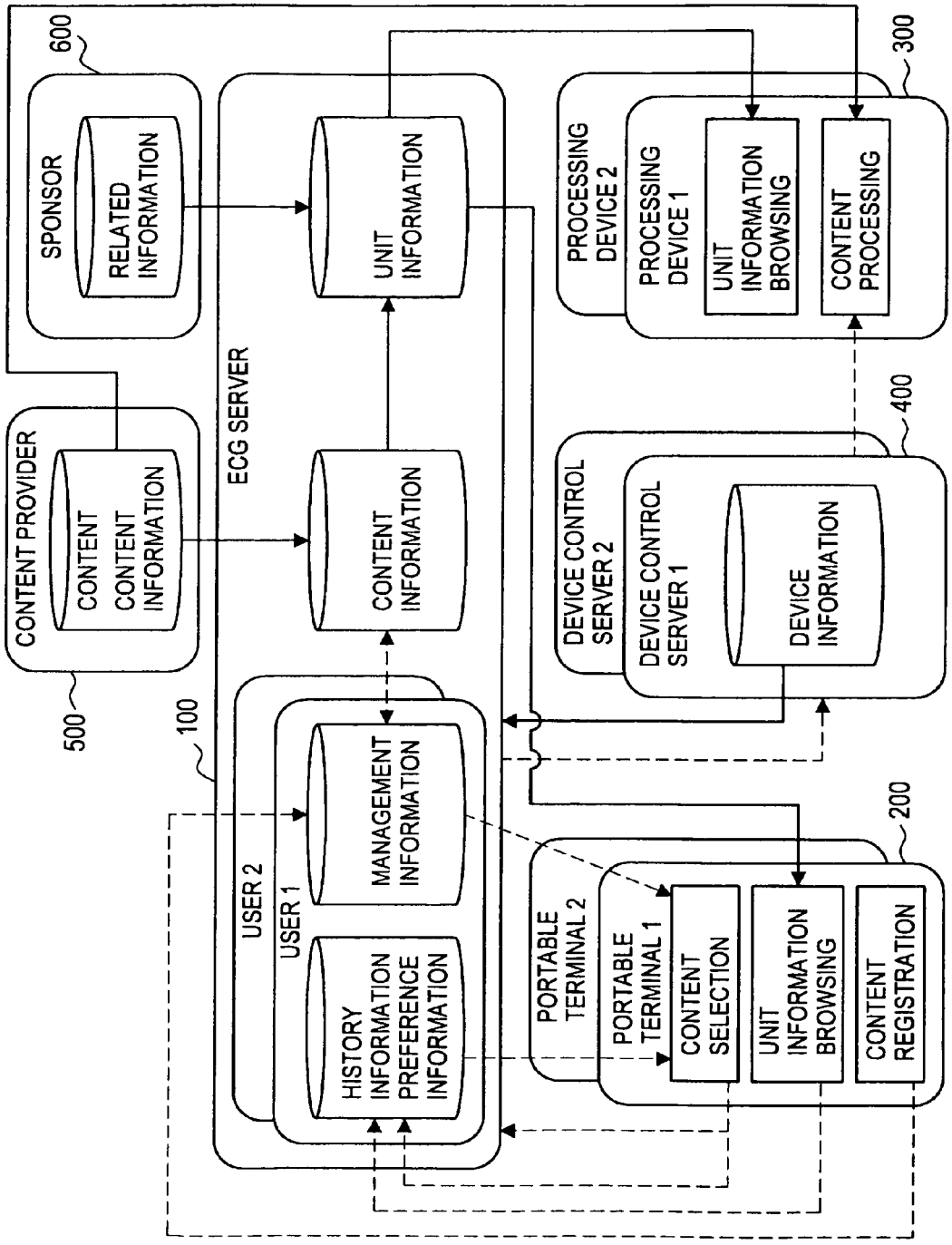

600
SPONSOR
RELATED INFORMATION
300
PROCESSING DEVICE 2
PROCESSING DEVICE 1
UNIT INFORMATION BROWSING
CONTENT PROCESSING
UNIT INFORMATION
ECG SERVER
CONTENT PROVIDER
CONTENT CONTENT INFORMATION
CONTENT INFORMATION
400
DEVICE CONTROL SERVER 2
DEVICE CONTROL SERVER 1
DEVICE INFORMATION
500
100
USER 2
USER 1
MANAGEMENT INFORMATION
HISTORY INFORMATION PREFERENCE INFORMATION
200
PORTABLE TERMINAL 2
PORTABLE TERMINAL 1
CONTENT SELECTION
UNIT INFORMATION BROWSING
CONTENT REGISTRATION

FIG.2

FIG.3

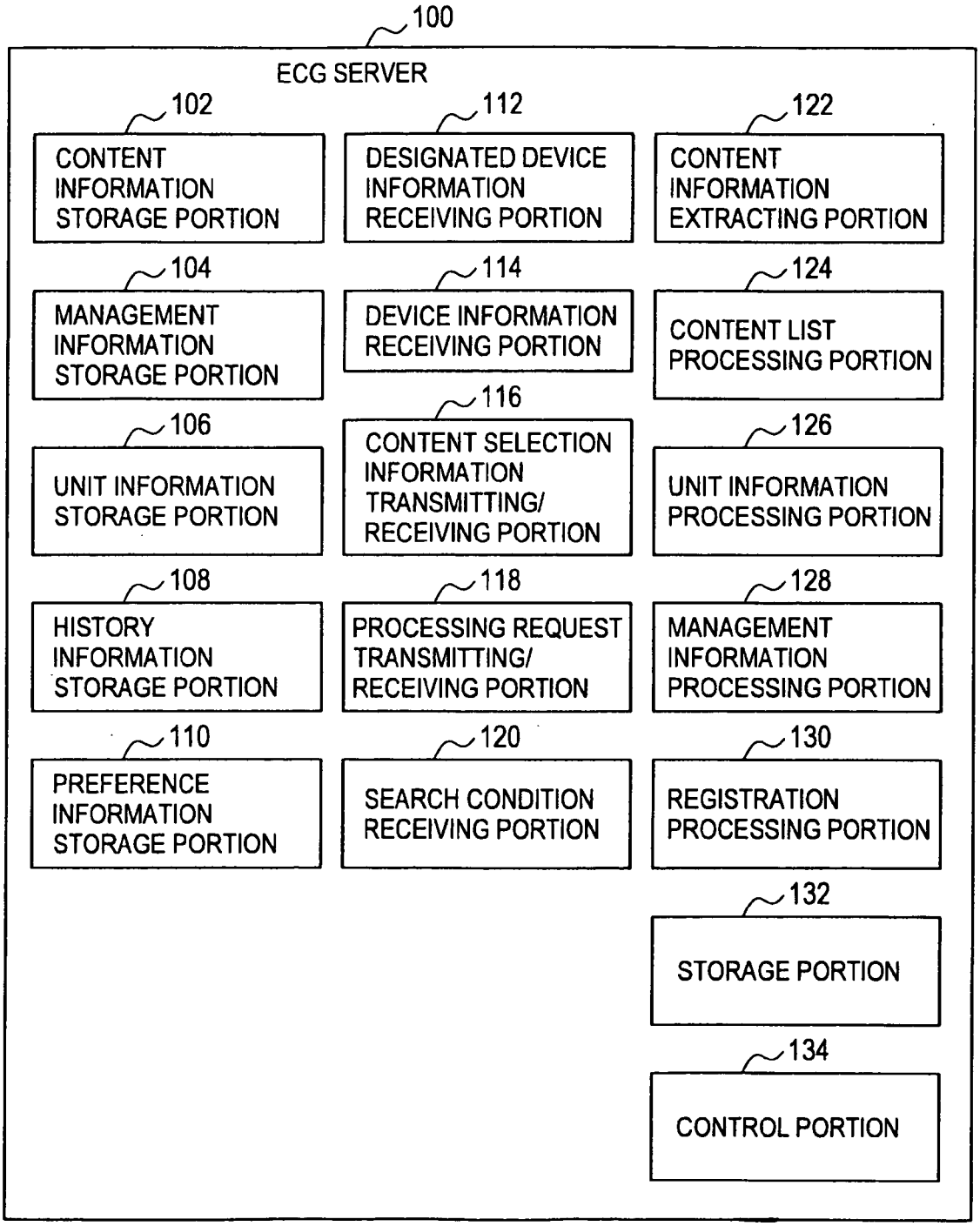

100
ECG SERVER
102
CONTENT INFORMATION STORAGE PORTION
104
MANAGEMENT INFORMATION STORAGE PORTION
106
UNIT INFORMATION STORAGE PORTION
108
HISTORY INFORMATION STORAGE PORTION
110
PREFERENCE INFORMATION STORAGE PORTION
112
DESIGNATED DEVICE INFORMATION RECEIVING PORTION
114
DEVICE INFORMATION RECEIVING PORTION
116
CONTENT SELECTION INFORMATION TRANSMITTING/ RECEIVING PORTION
118
PROCESSING REQUEST TRANSMITTING/ RECEIVING PORTION
120
SEARCH CONDITION RECEIVING PORTION
122
CONTENT INFORMATION EXTRACTING PORTION
124
CONTENT LIST PROCESSING PORTION
126
UNIT INFORMATION PROCESSING PORTION
128
MANAGEMENT INFORMATION PROCESSING PORTION
130
REGISTRATION PROCESSING PORTION
132
STORAGE PORTION
134
CONTROL PORTION

FIG.4

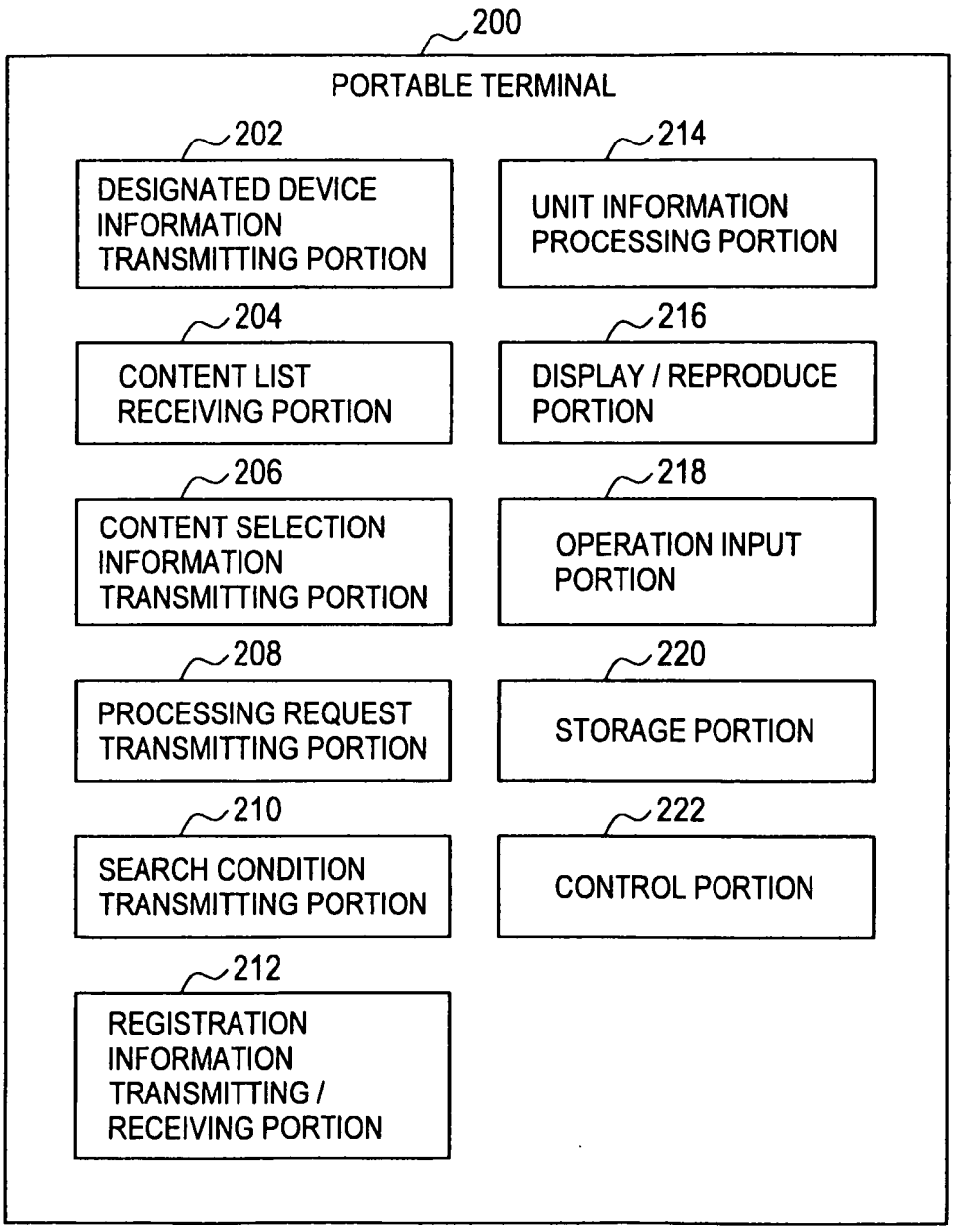

200
PORTABLE TERMINAL
202
DESIGNATED DEVICE INFORMATION TRANSMITTING PORTION
204
CONTENT LIST RECEIVING PORTION
206
CONTENT SELECTION INFORMATION TRANSMITTING PORTION
208
PROCESSING REQUEST TRANSMITTING PORTION
210
SEARCH CONDITION TRANSMITTING PORTION
212
REGISTRATION INFORMATION TRANSMITTING / RECEIVING PORTION
214
UNIT INFORMATION PROCESSING PORTION
216
DISPLAY / REPRODUCE PORTION
218
OPERATION INPUT PORTION
220
STORAGE PORTION
222
CONTROL PORTION

FIG.5

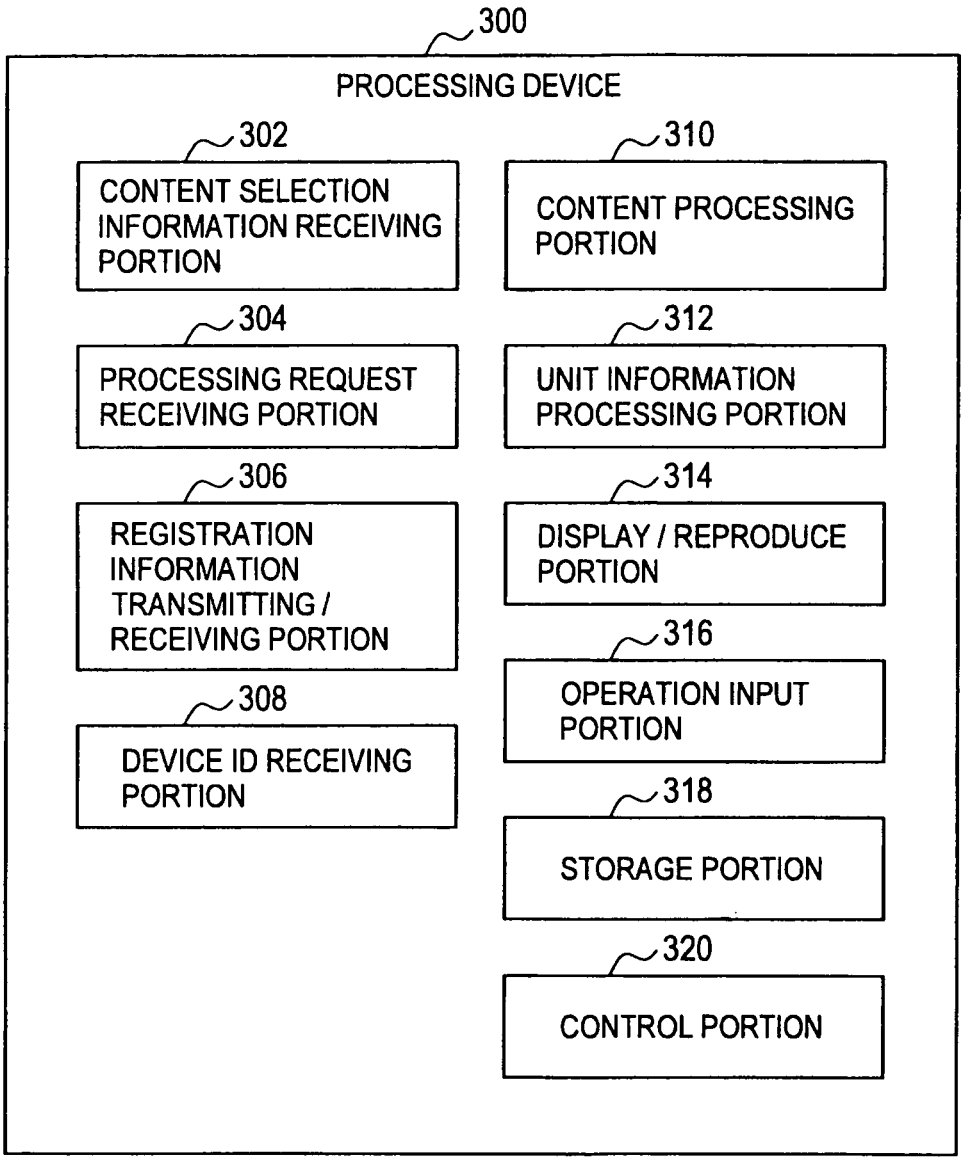

300
PROCESSING DEVICE
302
CONTENT SELECTION INFORMATION RECEIVING PORTION
304
PROCESSING REQUEST RECEIVING PORTION
306
REGISTRATION INFORMATION TRANSMITTING / RECEIVING PORTION
308
DEVICE ID RECEIVING PORTION
310
CONTENT PROCESSING PORTION
312
UNIT INFORMATION PROCESSING PORTION
314
DISPLAY / REPRODUCE PORTION
316
OPERATION INPUT PORTION
318
STORAGE PORTION
320
CONTROL PORTION

FIG.6

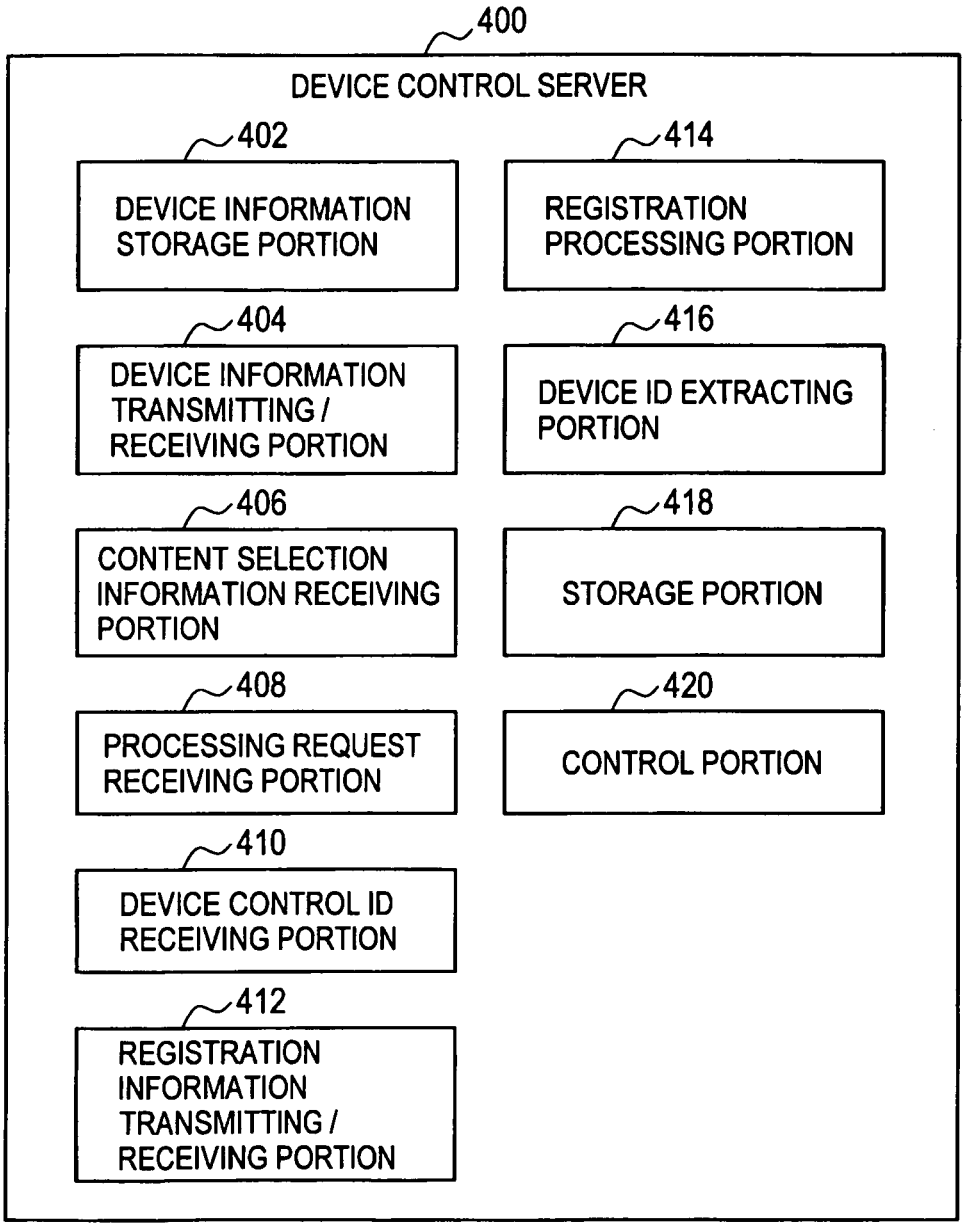

400
DEVICE CONTROL SERVER
402
DEVICE INFORMATION STORAGE PORTION
404
DEVICE INFORMATION TRANSMITTING / RECEIVING PORTION
406
CONTENT SELECTION INFORMATION RECEIVING PORTION
408
PROCESSING REQUEST RECEIVING PORTION
410
DEVICE CONTROL ID RECEIVING PORTION
412
REGISTRATION INFORMATION TRANSMITTING / RECEIVING PORTION
414
REGISTRATION PROCESSING PORTION
416
DEVICE ID EXTRACTING PORTION
418
STORAGE PORTION
420
CONTROL PORTION

FIG.7A

```
<content id="c9999" name"PROFESSIONAL STYLE" genre="DOCUMENTARY"
synopsis="INTRODUCING PROFESSIONALS OF VARIOUS FIELDS IN THE WORLD" start_data="2007/7/1"
start_time="22:00:00" end_time="23:00:00">
<keywords data="AAA WORK IMPRESSION"/>
<ECG_Reference url="http:/ecg_db/" ref_id"="u5555"/>
<CreditsList>
 <Person id="1_1" name="AAA" person_master_id="pppp00101"/>
 <Person id="1_2" name="BBB" person_master_id="pppp00102"/>
 <Person id="1_3" name="CCC" person_master_id="pppp00103"/>
 <Person id="1_4" name="DDD" person_master_id="pppp00104"/>
</CreditsList>
</content>
```

FIG.7B

```
<ECG_unit id="u5555">
<ECG_content_list>
 <ECG_item title="MC AAA" priority="low" type="person" presentation_type="p1" imageURL=
 "http://image/aaa.png" text="http:/text/a.txt/">
 <ECG_item title="GUEST BBB" priority="high" type="person" presentation_type="p1" imageURL=
 "http://image/bbb.png" text="http:/text/b.txt/">
</ECG_content_list>

<ECG_Reference_list>
 <ECG_item title="PROFESSIONAL STYLE DVD PACKAGE" priority="high" type="DVD" presentation_type=
  "p1" imageURL="http:/image/ccc.png" text="http:/text/c.txt" QR_code="http:/QR/111"/>
</ECG_Reference_list>
</ECG_unit>
```

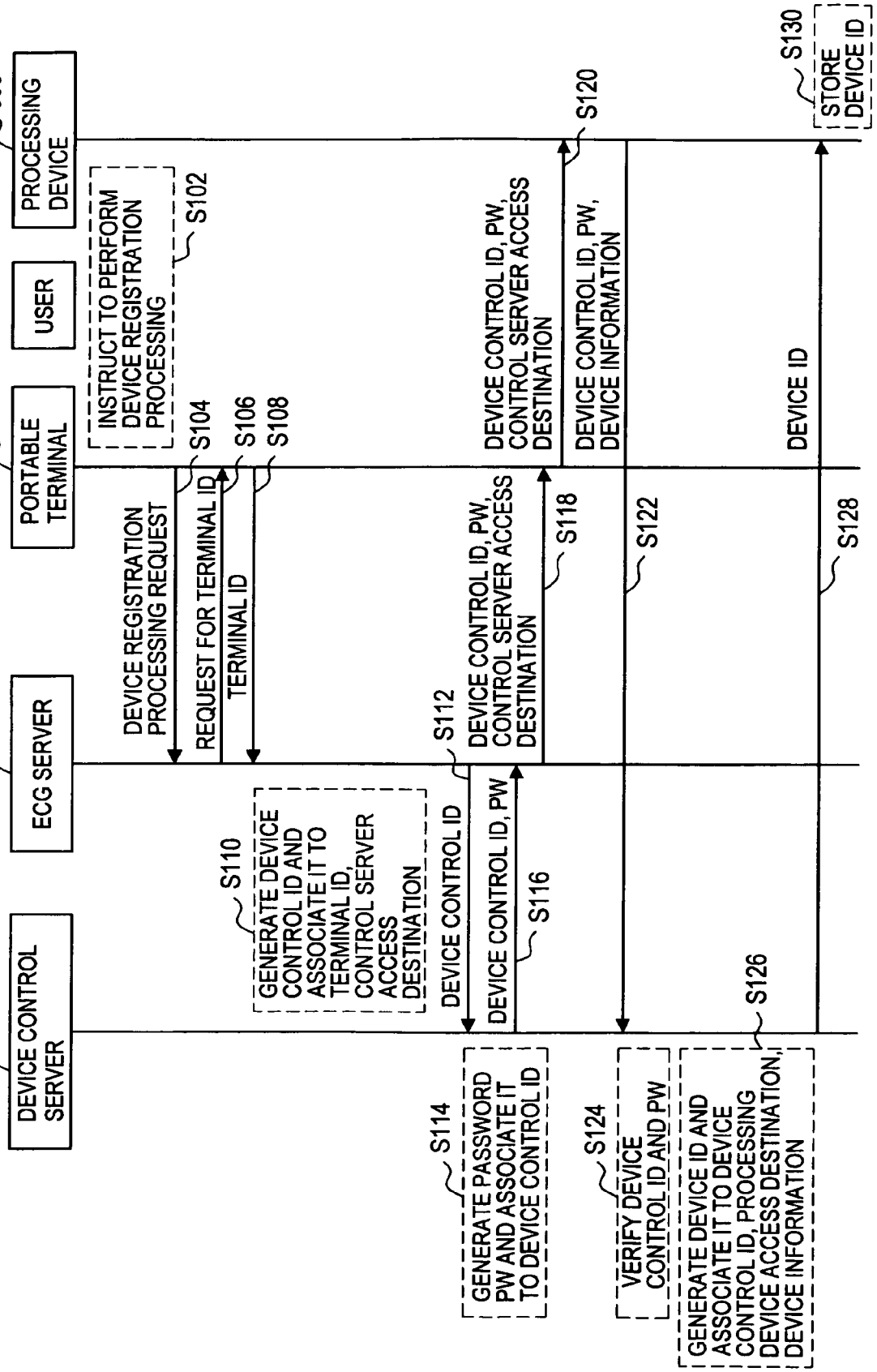

400
DEVICE CONTROL SERVER
100
ECG SERVER
200
PORTABLE TERMINAL
USER
300
PROCESSING DEVICE
INSTRUCT TO PERFORM DEVICE REGISTRATION PROCESSING
S102
DEVICE REGISTRATION PROCESSING REQUEST
S104
REQUEST FOR TERMINAL ID
S106
TERMINAL ID
S108
S110
GENERATE DEVICE CONTROL ID AND ASSOCIATE IT TO TERMINAL ID, CONTROL SERVER ACCESS DESTINATION
S112
DEVICE CONTROL ID
S114
GENERATE PASSWORD PW AND ASSOCIATE IT TO DEVICE CONTROL ID
DEVICE CONTROL ID, PW
S116
DEVICE CONTROL ID, PW, CONTROL SERVER ACCESS DESTINATION
S118
DEVICE CONTROL ID, PW, CONTROL SERVER ACCESS DESTINATION
S120
DEVICE CONTROL ID, PW, DEVICE INFORMATION
S122
S124
VERIFY DEVICE CONTROL ID AND PW
S126
GENERATE DEVICE ID AND ASSOCIATE IT TO DEVICE CONTROL ID, PROCESSING DEVICE ACCESS DESTINATION, DEVICE INFORMATION
DEVICE ID
S128
S130
STORE DEVICE ID

FIG.8

FIG.9

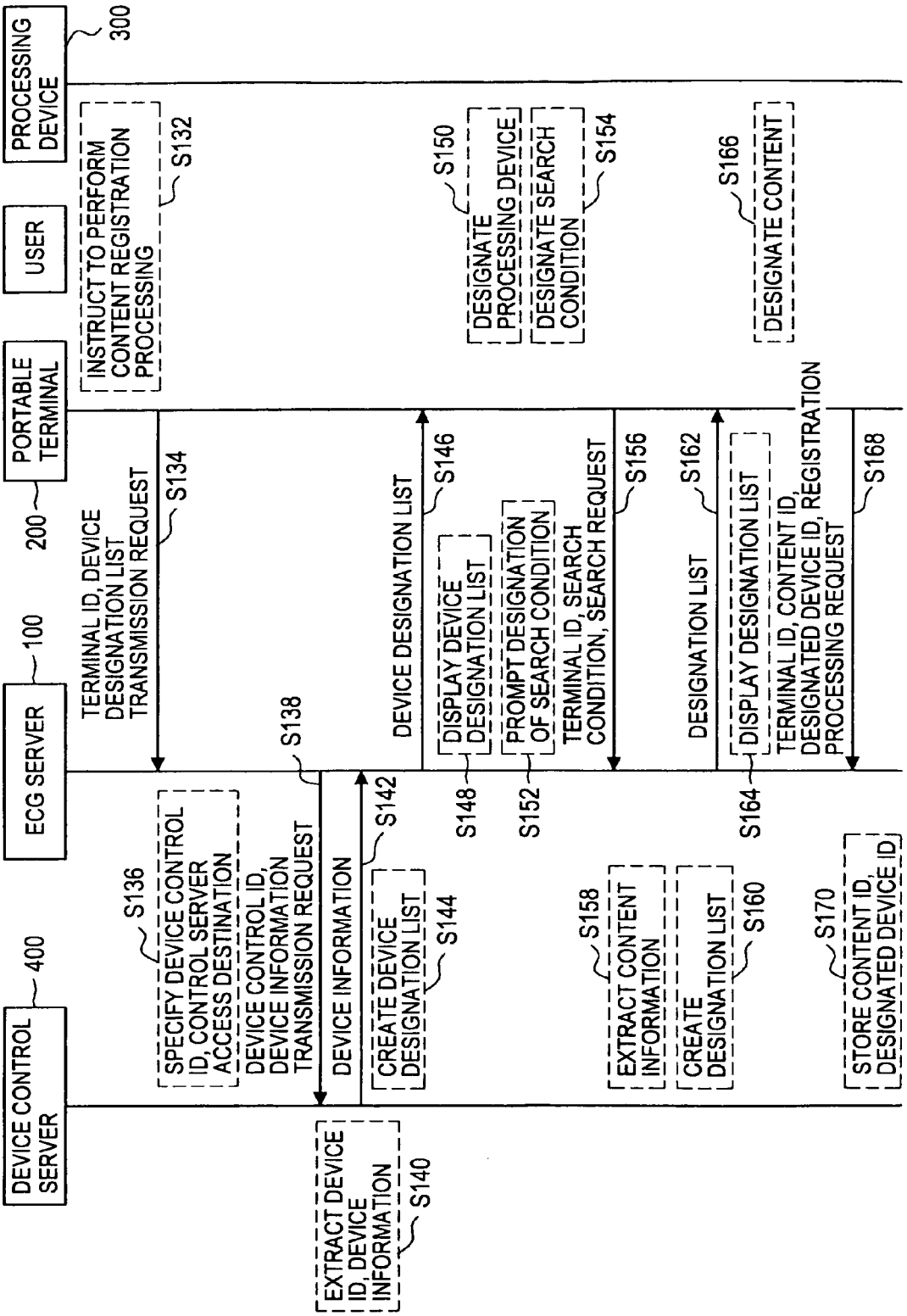

DEVICE CONTROL SERVER
400
ECG SERVER
100
PORTABLE TERMINAL
200
USER
PROCESSING DEVICE
300
INSTRUCT TO PERFORM CONTENT REGISTRATION PROCESSING
S132
TERMINAL ID, DEVICE DESIGNATION LIST TRANSMISSION REQUEST
S134
S136
SPECIFY DEVICE CONTROL ID, CONTROL SERVER ACCESS DESTINATION
DEVICE CONTROL ID, DEVICE INFORMATION TRANSMISSION REQUEST
S138
EXTRACT DEVICE ID, DEVICE INFORMATION
S140
DEVICE INFORMATION
S142
CREATE DEVICE DESIGNATION LIST
S144
DEVICE DESIGNATION LIST
S146
DISPLAY DEVICE DESIGNATION LIST
S148
PROMPT DESIGNATION OF SEARCH CONDITION
S150
DESIGNATE PROCESSING DEVICE
S152
DESIGNATE SEARCH CONDITION
S154
TERMINAL ID, SEARCH CONDITION, SEARCH REQUEST
S156
EXTRACT CONTENT INFORMATION
S158
CREATE DESIGNATION LIST
S160
DESIGNATION LIST
S162
DISPLAY DESIGNATION LIST
S164
DESIGNATE CONTENT
S166
TERMINAL ID, CONTENT ID, DESIGNATED DEVICE ID, REGISTRATION PROCESSING REQUEST
S168
STORE CONTENT ID, DESIGNATED DEVICE ID
S170

FIG.10A

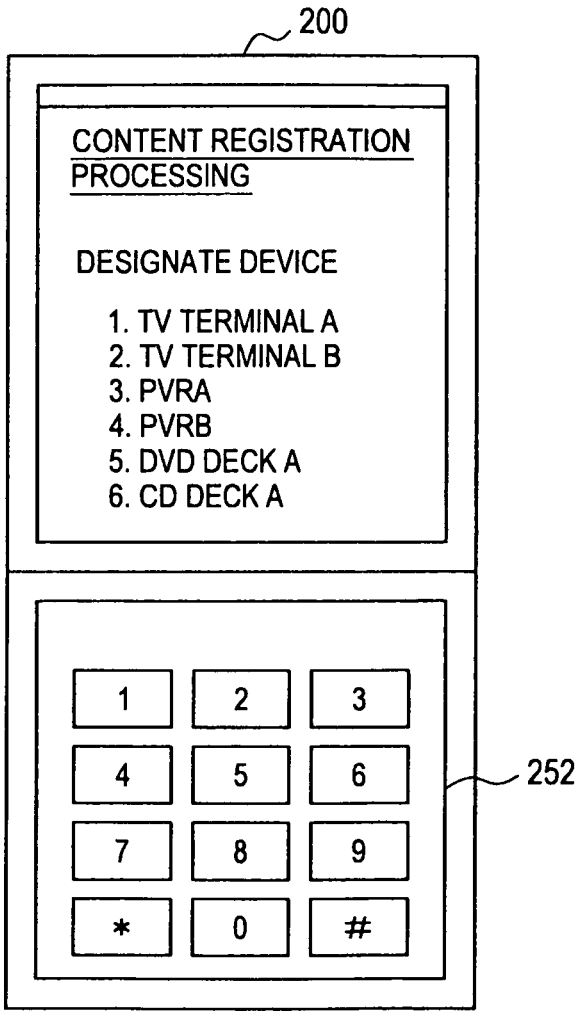

200
CONTENT REGISTRATION PROCESSING
DESIGNATE DEVICE
1. TV TERMINAL A
2. TV TERMINAL B
3. PVRA
4. PVRB
5. DVD DECK A
6. CD DECK A
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.10B

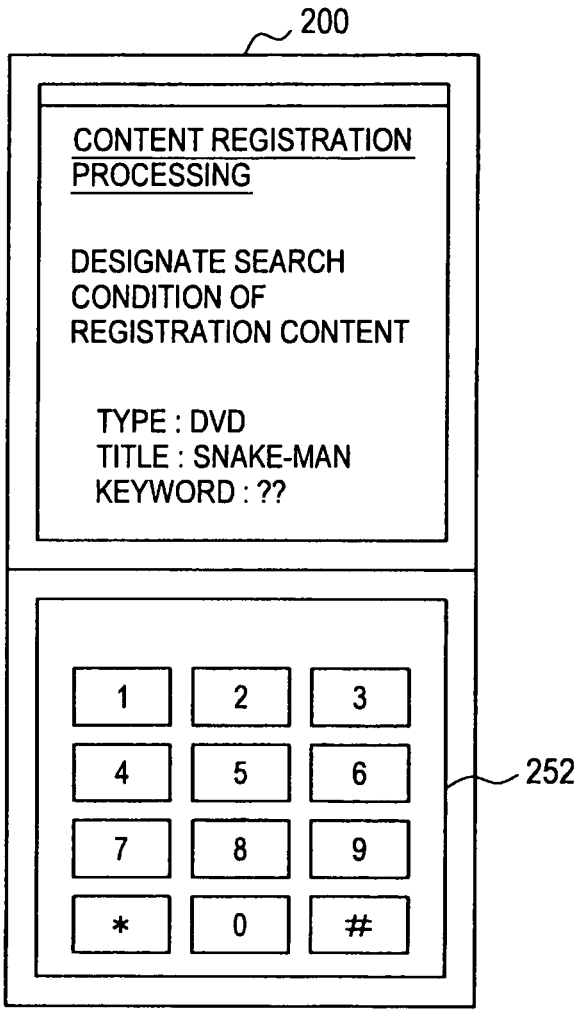

200
CONTENT REGISTRATION PROCESSING
DESIGNATE SEARCH CONDITION OF REGISTRATION CONTENT
TYPE : DVD
TITLE : SNAKE-MAN
KEYWORD : ??
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.10C

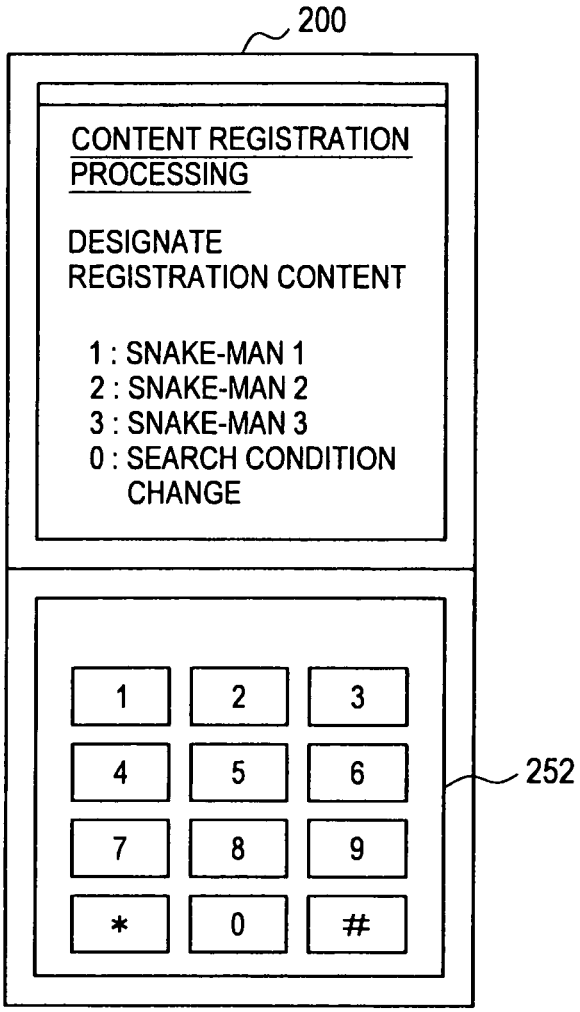

200
CONTENT REGISTRATION PROCESSING
DESIGNATE REGISTRATION CONTENT
1 : SNAKE-MAN 1
2 : SNAKE-MAN 2
3 : SNAKE-MAN 3
0 : SEARCH CONDITION CHANGE
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.11

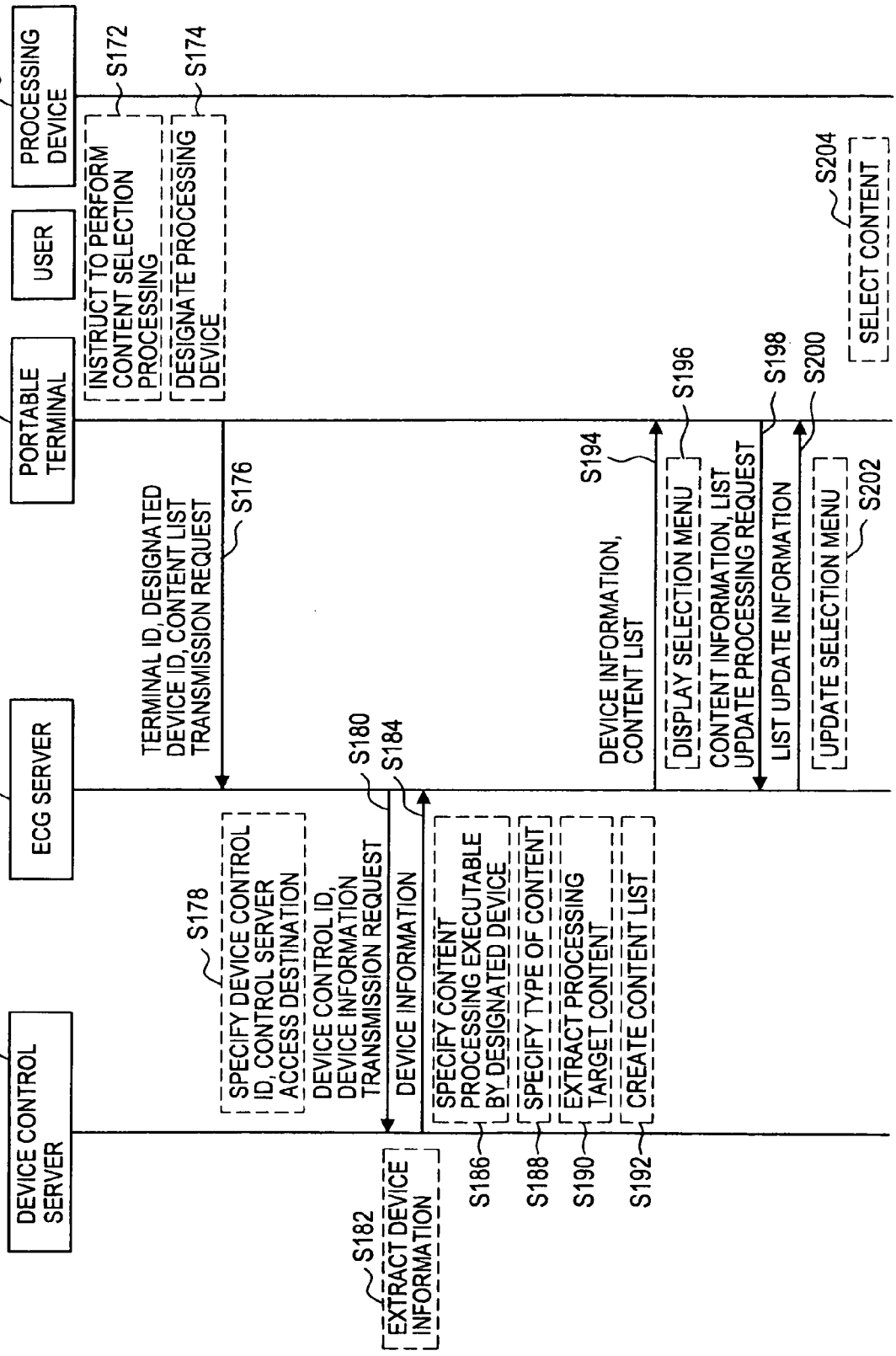

400
DEVICE CONTROL SERVER
100
ECG SERVER
200
PORTABLE TERMINAL
USER
300
PROCESSING DEVICE
S172
INSTRUCT TO PERFORM CONTENT SELECTION PROCESSING
S174
DESIGNATE PROCESSING DEVICE
S176
TERMINAL ID, DESIGNATED DEVICE ID, CONTENT LIST TRANSMISSION REQUEST
S178
SPECIFY DEVICE CONTROL ID, CONTROL SERVER ACCESS DESTINATION
S180
DEVICE CONTROL ID, DEVICE INFORMATION TRANSMISSION REQUEST
S182
EXTRACT DEVICE INFORMATION
S184
DEVICE INFORMATION
S186
SPECIFY CONTENT PROCESSING EXECUTABLE BY DESIGNATED DEVICE
S188
SPECIFY TYPE OF CONTENT
S190
EXTRACT PROCESSING TARGET CONTENT
S192
CREATE CONTENT LIST
S194
DEVICE INFORMATION, CONTENT LIST
S196
DISPLAY SELECTION MENU
S198
CONTENT INFORMATION, LIST UPDATE PROCESSING REQUEST
S200
LIST UPDATE INFORMATION
S202
UPDATE SELECTION MENU
S204
SELECT CONTENT

FIG.12A

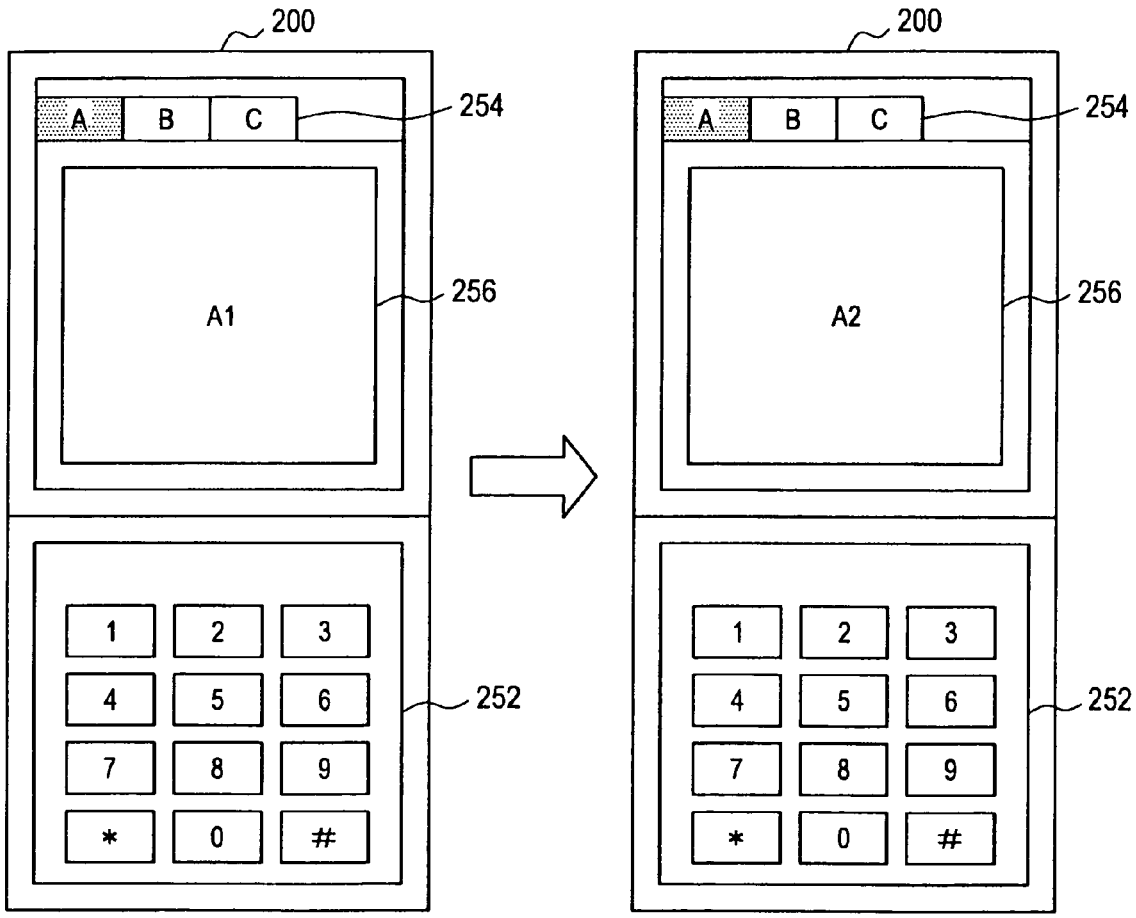
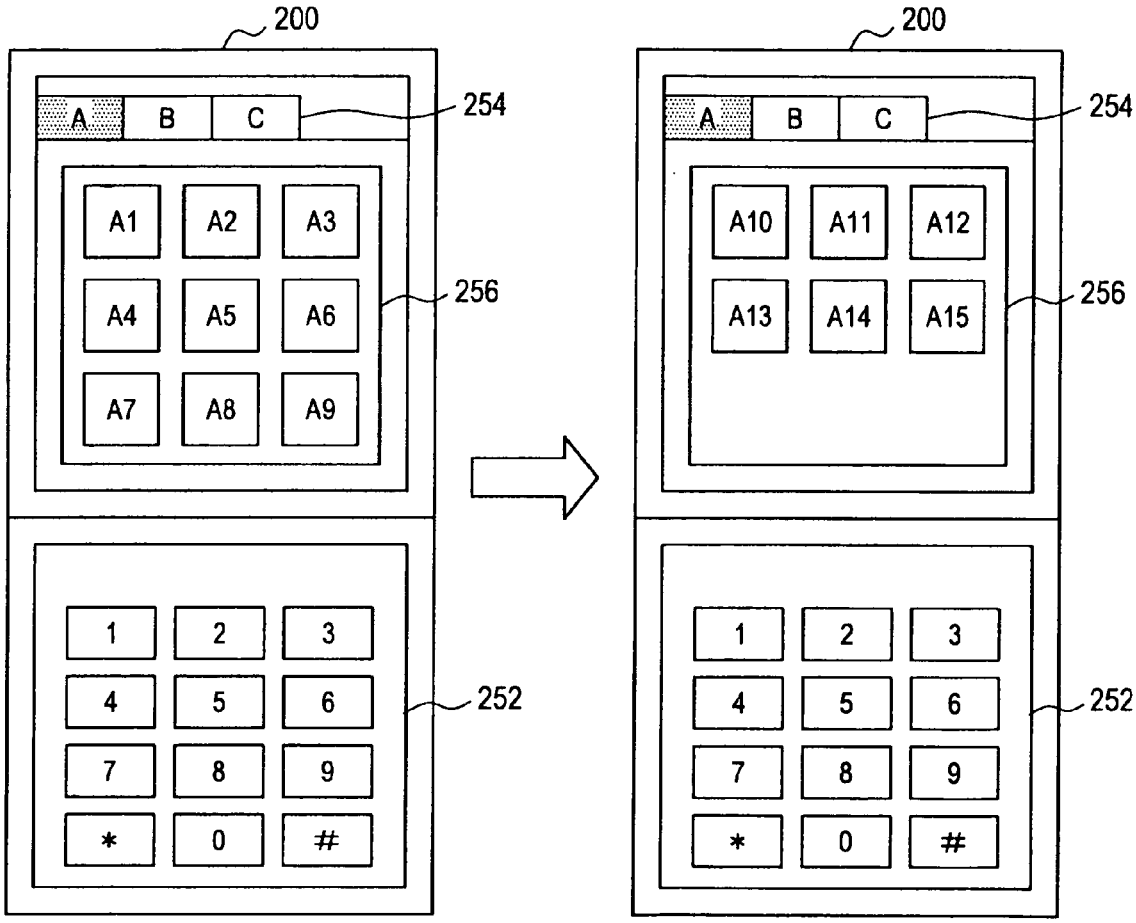

200
A
B
C
254
A1
256
1
2
3
4
5
6
7
8
9
*
0
#
252
200
A
B
C
254
A2
256
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.12B


200
A
B
C
254
A1
A2
A3
A4
A5
A6
A7
A8
A9
256
1
2
3
4
5
6
7
8
9
*
0
#
252
200
A
B
C
254
A10
A11
A12
A13
A14
A15
256
1
2
3
4
5
6
7
8
9
*
0
#
252

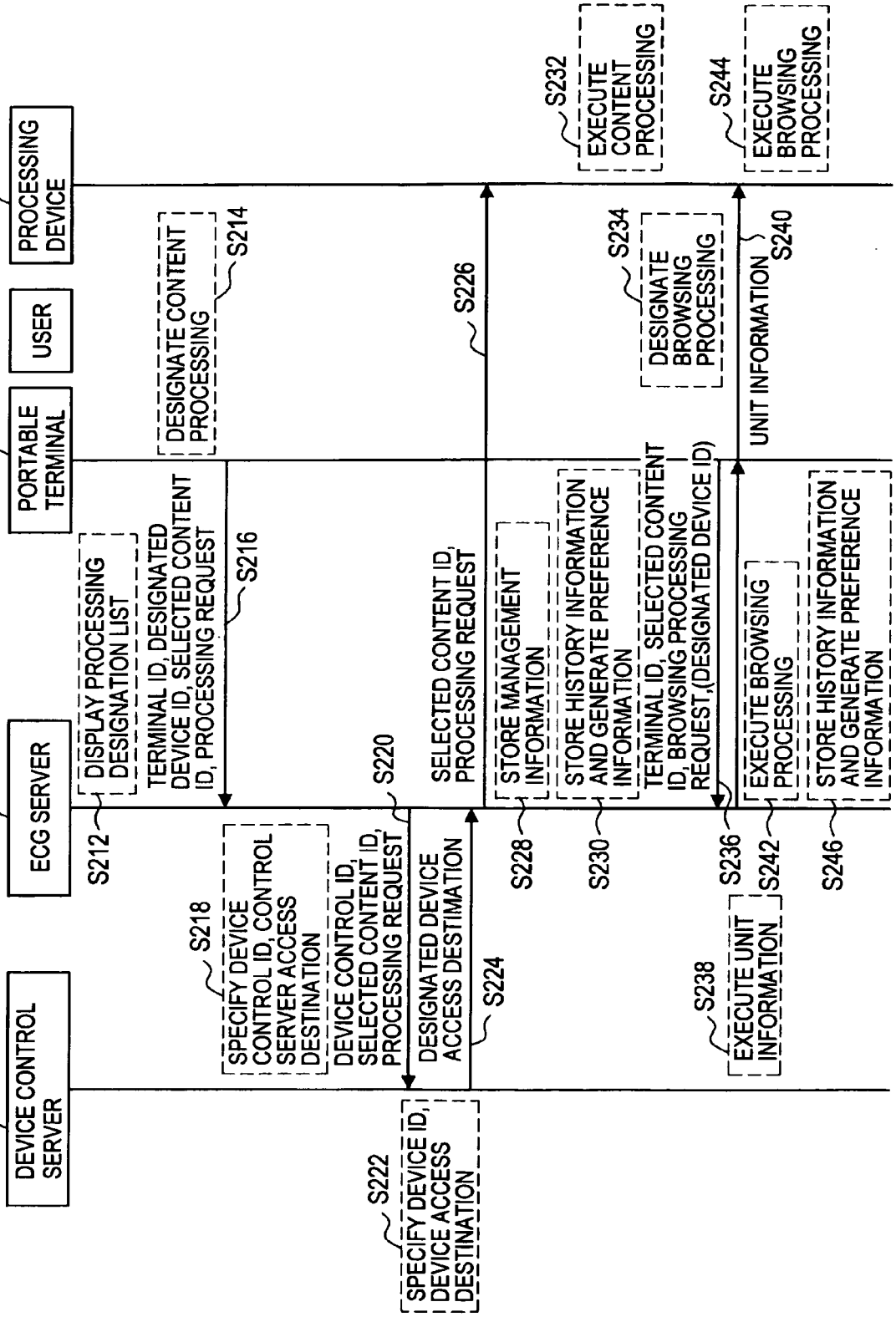

100
ECG SERVER
200
PORTABLE TERMINAL
USER
300
PROCESSING DEVICE
400
DEVICE CONTROL SERVER
S212
DISPLAY PROCESSING DESIGNATION LIST
S214
DESIGNATE CONTENT PROCESSING
S216
TERMINAL ID, DESIGNATED DEVICE ID, SELECTED CONTENT ID, PROCESSING REQUEST
S218
SPECIFY DEVICE CONTROL ID, CONTROL SERVER ACCESS DESTINATION
S220
DEVICE CONTROL ID, SELECTED CONTENT ID, PROCESSING REQUEST
S222
SPECIFY DEVICE ID, DEVICE ACCESS DESTINATION
S224
DESIGNATED DEVICE ACCESS DESTIMATION
S226
SELECTED CONTENT ID, PROCESSING REQUEST
S228
STORE MANAGEMENT INFORMATION
S230
STORE HISTORY INFORMATION AND GENERATE PREFERENCE INFORMATION
S232
EXECUTE CONTENT PROCESSING
S234
DESIGNATE BROWSING PROCESSING
S236
TERMINAL ID, SELECTED CONTENT ID, BROWSING PROCESSING REQUEST,(DESIGNATED DEVICE ID)
S238
EXECUTE UNIT INFORMATION
S240
UNIT INFORMATION
S242
EXECUTE BROWSING PROCESSING
S244
EXECUTE BROWSING PROCESSING
S246
STORE HISTORY INFORMATION AND GENERATE PREFERENCE INFORMATION

FIG.13

FIG.14

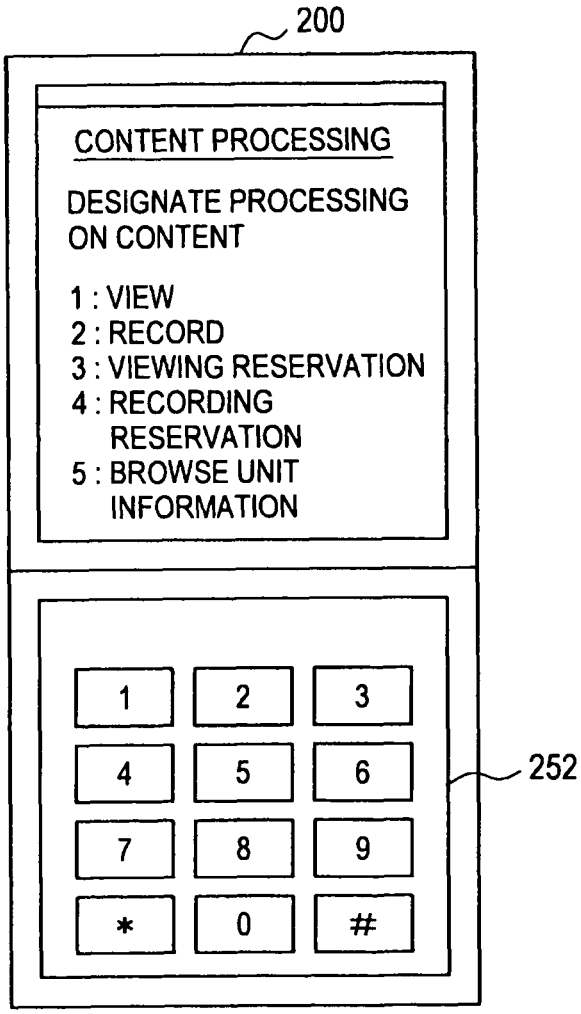

200
CONTENT PROCESSING
DESIGNATE PROCESSING ON CONTENT
1 : VIEW
2 : RECORD
3 : VIEWING RESERVATION
4 : RECORDING RESERVATION
5 : BROWSE UNIT INFORMATION
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.15

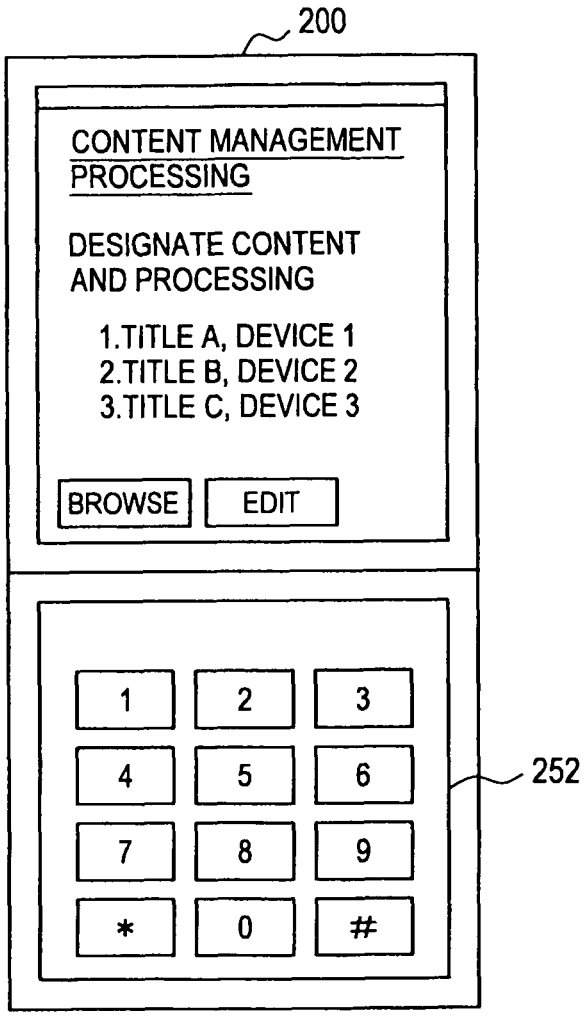
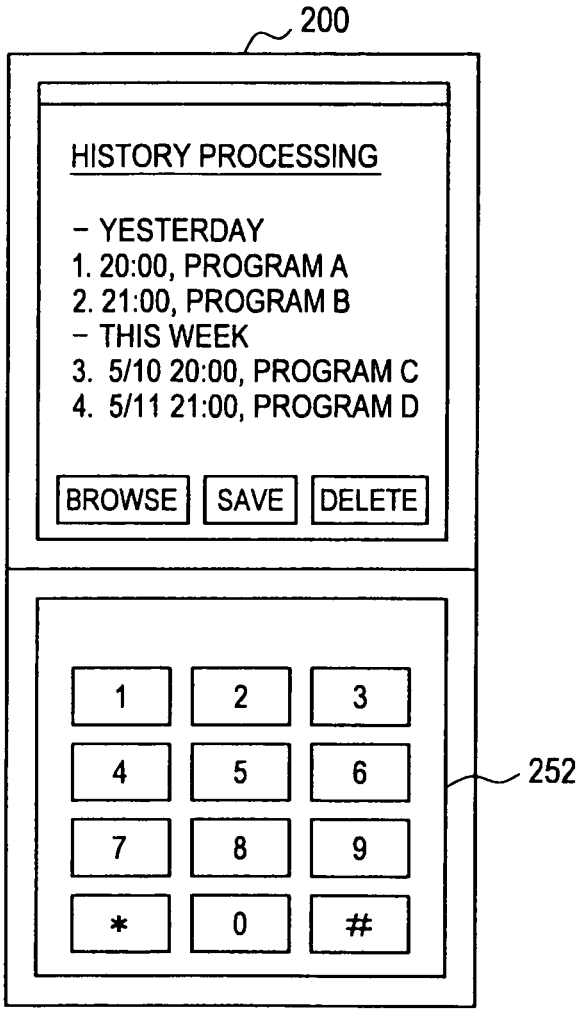

200
CONTENT MANAGEMENT PROCESSING
DESIGNATE CONTENT AND PROCESSING
1.TITLE A, DEVICE 1
2.TITLE B, DEVICE 2
3.TITLE C, DEVICE 3
BROWSE
EDIT
1
2
3
4
5
6
7
8
9
*
0
#
252

FIG.16


200
HISTORY PROCESSING
- YESTERDAY
1. 20:00, PROGRAM A
2. 21:00, PROGRAM B
- THIS WEEK
3. 5/10 20:00, PROGRAM C
4. 5/11 21:00, PROGRAM D
BROWSE
SAVE
DELETE
1
2
3
4
5
6
7
8
9
*
0
#
252

INFORMATION PROVIDING APPARATUS, PORTABLE INFORMATION TERMINAL, CONTENT PROCESSING DEVICE, DEVICE CONTROL APPARATUS, CONTENT PROCESSING SYSTEM AND PROGRAM

The present application claims priority from Japanese Patent Application No. JP 2008-123787 filed in the Japanese Patent Office on May 9, 2008, the entire content of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an information providing apparatus, a portable information terminal, a content processing device, a device control apparatus, a content processing system and a program.

2. Description of the Related Art

Content providers provide users with various contents using various kinds of service models and recording media today. On the other hand, users use contents using various kinds of content processing devices such as television terminals, set-top boxes (STB), personal video recorders (PVR), various recording and reproducing apparatus and personal computers. Thus, a user selects and uses a content with use of a content processing device capable of performing processing such as viewing, recording, reproduction, viewing reservation and recording reservation, for example, according to the type of the content.

Further, a content processing device that has a function to acquire and display or reproduce content information related to the content such as electronic program guide (EPG) information and data broadcast information, for example, together with or separately from the acquisition of the content is known.

Further, a content processing device that has a history management function to support selection of the content by accumulating the history information of the contents selected by a user, a content processing device that has a content recommendation function to analyze the preference of a user based on history information and recommend the content matching the preference to the user are known.

SUMMARY OF THE INVENTION

However, if there are a large variety of contents and content processing devices, a user may feel it burdensome to select contents, content information and so on with respect to each processing device. Particularly, a user feels burdensome when an operating method of a processing device is complicated or when an operating method is different among different processing devices.

Further, because history information is accumulated with respect to each processing device and preferences are not managed in a centralized manner among processing devices, a user may feel inconvenience when using the history management function and the content recommendation function. Particularly, the accumulated history information and preference information are unavailable during update of the content processing device, which makes a user feel inconvenience.

In light of the foregoing, it is desirable to provide information providing apparatus, portable information terminal, content processing device, device control apparatus, content processing system and program that enable improvement in convenience for content selection and processing.

According to a first embodiment of the present invention, there is provided an information providing apparatus included in a content processing system made up of the information providing apparatus, a portable information terminal, a content processing device and a device control apparatus connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus. The information providing apparatus includes a content information storage portion to store content information containing unit identification information for identifying unit information of a content to be processed; a management information storage portion to store management information for identifying a specific content managed with respect to each user of the portable information terminal; a unit information storage portion to store the unit information containing the content information and, selectively, related information related to the content information in association with the content; a designated device information receiving portion to receive designated device information for identifying the content processing device to perform content processing from the portable information terminal; a device information receiving portion to receive device information for specifying content processing executable by a designated device from the device control apparatus; a content information extracting portion to extract the content information of the content processable by the designated device from the content information storage portion based on the device information, and extract the content information of the content processable by the designated device, among specific contents managed with respect to each user of the portable information terminal, from the content information storage portion based on the device information and the management information; a content list processing portion to create a content list including the contents corresponding to the extracted content information and transmit the content list to the portable information terminal; a content selection information transmitting/receiving portion to receive content selection information for identifying a selected content selected based on the content list from the portable information terminal and transmit the content selection information to the content processing device via the device control apparatus; a processing request transmitting/receiving portion to receive a processing request indicating content processing to be performed on the selected content from the portable information terminal and transmit the processing request to the designated device via the device control apparatus; a unit information processing portion to extract the unit information of the selected content from the unit information storage portion based on the unit identification information contained in the content information of the selected content and provide the unit information to the portable information terminal; and a management information processing portion to store the management information for identifying the selected content into the management information storage portion.

In this configuration, the content list including the content processable by the designated device, among the contents to be processed including a specific content managed with respect to each user, is created, and the content is selected by a user through the portable information terminal. Then, the processing request for the selected content is transmitted to the designated device, and the unit information of the selected content is provided to the portable information terminal. Further, the selected content is managed with respect to each user as the specific content. A content provider can thereby provide the content and the unit information to a user by allowing

a user to select the content without depending on the content and the content processing device.

According to a second embodiment of the present invention, there is provided a portable information terminal included in a content processing system made up of an information providing apparatus, the portable information terminal, a content processing device and a device control apparatus connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus. In the content processing system, content information containing unit identification information for identifying unit information of a content to be processed is stored in the information providing apparatus, management information for identifying a specific content managed with respect to each user of the portable information terminal is stored in the information providing apparatus, and the unit information containing the content information and, selectively, related information related to the content information is stored in association with the content in the information providing apparatus. The portable information terminal includes a designated device information transmitting portion to transmit designated device information for identifying the content processing device to perform content processing to the information providing apparatus; a content list receiving portion to acquire a content list including the content corresponding to the content information of a content processable by a designated device and extracted based on device information indicating content processing executable by the designated device and the content corresponding to the content information of a specific content managed with respect to each user of the portable information terminal and processable by the designated device and extracted based on the device information and the management information from the information providing apparatus; a content selection information transmitting portion to transmit content selection information for identifying a selected content selected based on the content list to the designated device via the information providing apparatus and the device control apparatus; a processing request transmitting portion to transmit a processing request indicating content processing to be performed on the selected content to the designated device via the information providing apparatus and the device control apparatus; a unit information processing portion to acquire unit information extracted as the unit information of the selected content based on the unit identification information contained in the content information of the selected content from the information providing apparatus and process the unit information; and a display/reproducing portion to display or reproduce the content list and the unit information.

In this configuration, the content list including the content processable by the designated device, among the contents to be processed including a specific content managed with respect to each user, is received, and the content is selected by a user. Then, the processing request for the selected content is transmitted to the designated device, and the unit information of the selected content is acquired and displayed or reproduced. A user can thereby use the content and the unit information using the portable information terminal by selecting the content without depending on the content and the content processing device.

According to a third embodiment of the present invention, there is provided a content processing device included in a content processing system made up of an information providing apparatus, a portable information terminal, the content processing device and a device control apparatus connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, and designated as a designated device to perform content processing by the portable information terminal. In the content processing system, content information containing unit identification information for identifying unit information of a content to be processed is stored in the information providing apparatus, and management information for identifying a specific content managed with respect to each user of the portable information terminal is stored in the information providing apparatus. The content processing device includes a content selection information receiving portion to receive content selection information for identifying a selected content selected by the portable information terminal based on a content list including the content corresponding to the content information of a content processable by the designated device and extracted based on device information indicating content processing executable by the designated device and the content corresponding to the content information of a specific content managed with respect to each portable information terminal and processable by the designated device and extracted based on the device information and the management information from the portable information terminal via the information providing apparatus and the device control apparatus; a processing request receiving portion to receive a processing request indicating content processing to be performed on the selected content from the portable information terminal via the information providing apparatus and the device control apparatus; and a content processing portion to perform processing on the selected content based on the received content selection information and the received processing request.

In this configuration, the content is selected by a user through the portable information terminal based on the content list including the content processable by the designated device, among the contents to be processed including a specific content managed with respect to each user. Then, the processing request for the selected content is received by the designated device, and content processing is performed. A user can thereby use the content with the content processing device by selecting the content without depending on the content and the content processing device.

According to a fourth embodiment of the present invention, there is provided a device control apparatus included in a content processing system made up of an information providing apparatus, a portable information terminal, a content processing device and the device control apparatus connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus. In the content processing system, content information containing unit identification information for identifying unit information of a content to be processed is stored in the information providing apparatus, and management information for identifying a specific content managed with respect to each user of the portable information terminal is stored in the information providing apparatus. The device control apparatus includes a device information storage portion to store device information for specifying content processing executable by the content processing device; a device information transmitting/receiving portion to transmit and receive the device information to and from a designated device designated as the content processing device to perform content processing by the portable information terminal and the information providing apparatus; a content selection information receiving portion to transmit and receive content selection information for identifying a

selected content selected by the portable information terminal based on a content list including the content corresponding to the content information of a content processable by the designated device and extracted based on the device information of the designated device and the content corresponding to the content information of a specific content managed with respect to each portable information terminal and processable by the designated device and extracted based on the device information and the management information to and from the information providing apparatus and the designated device; and a processing request transmitting/receiving portion to transmit and receive a processing request indicating content processing to be performed on the selected content to and from the information providing apparatus and the designated device.

In this configuration, the content is selected by a user through the portable information terminal based on the content list including the content processable by the designated device, among the contents to be processed including a specific content managed with respect to each user. Then, the processing request for the selected content is received by the designated device via the information providing apparatus and the device control apparatus, and content processing is performed. A user can thereby use the content with the content processing device by selecting the content without depending on the content and the content processing device.

According to a fifth embodiment of the present invention, there is provided a content processing system made up of the information providing apparatus according to the first embodiment, the portable information terminal according to the second embodiment, the content processing device according to the third embodiment, and the device control apparatus according to the fourth embodiment.

According to a sixth embodiment of the present invention, there is provided a program for causing the information providing apparatus according to the first embodiment to execute an information providing method.

According to the embodiments of the present invention, it is possible to provide an information providing apparatus, a portable information terminal, a content processing device, a device control apparatus, a content processing system and a program that enable improvement in convenience for content selection and processing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an explanatory view conceptually showing a content processing system according to an embodiment of the present invention.

FIG. **2** is an explanatory view showing the configuration of a content processing system.

FIG. **3** is a block diagram showing the primary functional components of an ECG server.

FIG. **4** is a block diagram showing the primary functional components of a portable terminal.

FIG. **5** is a block diagram showing the primary functional components of a processing device.

FIG. **6** is a block diagram showing the primary functional components of a device control server.

FIG. **7**A is an explanatory view showing an example of content information as ECG data.

FIG. **7**B is an explanatory view showing an example of unit information as ECG data.

FIG. **8** is a sequence chart showing the procedure of device registration processing.

FIG. **9** is a sequence chart showing the procedure of content registration processing.

FIG. **10**A is an explanatory view showing an example of an operation menu displayed on a portable terminal during content registration processing.

FIG. **10**B is an explanatory view showing an example of an operation menu displayed on a portable terminal during content registration processing.

FIG. **10**C is an explanatory view showing an example of an operation menu displayed on a portable terminal during content registration processing.

FIG. **11** is a sequence chart showing the procedure of content selection processing.

FIG. **12**A is an explanatory view showing an example of an operation menu displayed on a portable terminal during content selection processing.

FIG. **12**B is an explanatory view showing an example of an operation menu displayed on a portable terminal during content selection processing.

FIG. **13** is a sequence chart showing the procedure of content processing and unit information browsing processing.

FIG. **14** is an explanatory view showing an example of an operation menu displayed on a portable terminal during content processing.

FIG. **15** is an explanatory view showing an example of an operation menu displayed on a portable terminal during content management processing.

FIG. **16** is an explanatory view showing an example of an operation menu displayed on a portable terminal during history processing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the appended drawings. Note that, in the specification and the appended drawings, structural elements that have substantially the same function and structure are denoted with the same reference numerals, and repeated explanation of these structural elements is omitted.

Concept of the Content Processing System

FIG. **1** is an explanatory view conceptually showing a content processing system according to an embodiment of the present invention. As shown in FIG. **1**, the content processing system includes an electronic content guide (ECG) server **100** (information providing apparatus), a portable terminal **200** (portable information terminal), a processing device **300** (content processing device), and a device control server **400** (device control apparatus).

The portable terminal **200** transmits and receives information to and from the ECG server **100** through a communication network and transmits information to the processing device **300** using near field communication such as infrared communication, for example. The ECG server **100**, the processing device **300** and the device control server **400** exchange information with one another through a communication network.

The portable terminal **200** is an example of portable information terminals including a cellular phone, a personal digital assistant (PDA) and so on, for example, and acquires content information, unit information and so on from the ECG server **100** and processes them. The processing device **300** is a television terminal, a PVR, various recording and reproducing apparatus, a personal computer and so on, for example, and it processes contents provided by a content provider **500**,

contents managed by a user, unit information acquired from the ECG server **100** and so on. The portable terminal **200** indirectly controls the processing device **300** by registering the processing device **300** in the content processing system and then transmitting a processing request to the ECG server **100**.

The ECG server **100** registers and manages content information, unit information and so on and provides those information to the portable terminal **200** and the processing device **300**. The device control server **400** allows the portable terminal **200** to indirectly control the processing device **300** in cooperation with the ECG server **100** to thereby allow the processing device **300** to perform content processing with use of the portable terminal **200**.

The content is information such as video information, image information, text information and audio information, for example. The content is provided to a user by the content provider **500** using various kinds of service models such as a broadcast service, a communication service, a broadcast communication service and an internet service, various kinds of recording media such as a DVD, a CD and a magnetic tape and so on. The content is a target of content processing to be performed by the processing devices **300**, such as viewing, recording, reproduction, viewing reservation and recording reservation, for example, when used by a user.

The content information is information associated with the content, and it involves identification information (a content ID, a title etc.), attribute information (e.g. a service model, a type of a recording medium, a classification of content, a keyword etc.), detailed information and so on of the content, for example. The content information corresponding to the time-scheduled content provided by a broadcast service or the like, for example, includes content scheduling information (a providing channel, broadcast date and time etc.).

The related information is information related to the content information, and it involves detailed information related to the attribute information of the content, sales information, advertising information, other content information and so on, for example. The unit information is information associated with the content, and it includes the content information and, selectively, the related information and it also includes information for associating the content information and the related information to the content.

A content ID that allows identification of the content is assigned to the content, and a unit ID that allows identification of the unit information is assigned to the unit information. The content information contains the unit ID for referring to the unit information of the corresponding content.

The portable terminal **200** registers at least one processing device **300** in the content processing system. The portable terminal **200** has a terminal ID that allows identification of the portable terminal **200**. The portable terminal **200** is provided with a device control ID to be used for indirect control of the processing device **300** from a specific ECG server **100**, and the ECG server **100** stores the device control ID in association with the terminal ID of the portable terminal **200**. A device ID to be used by the portable terminal **200** for indirect control of the processing device **300** is assigned to the processing device **300** from a specific device control server **400**, and the device control server **400** stores the device ID of the processing device **300** in association with the device control ID, thereby registering the processing device **300** in the content processing system.

Configuration of the Content Processing System

FIG. **2** is an explanatory view showing the configuration of a content processing system. In FIG. **2**, transmission and reception of the content, the content information, the unit information and so on among the components of the content processing system are indicated by the solid arrows, and transmission and reception of the other information such as processing information and control information are indicated by the dotted arrows.

The processing device **300** acquires and processes the contents provided using various kinds of service models and/or processes the contents provided using various kinds of recording media. The processing device **300** is at least one processing device **300**, and it is registered in the content processing system with respect to each user (each portable terminal **200**) and indirectly controlled by a user through the portable terminal **200**.

The ECG server **100** is operated and managed by a service provider or the like which provides the content information, the unit information and so on. The ECG server **100** registers and manages the content information provided by the content provider **500** and the related information provided by a sponsor **600** such as a sales agency, an advertising agency and the content provider **500** as ECG data. The ECG server **100** provides the content information and the unit information containing the content information and, selectively, the related information to the portable terminal **200** and the processing device **300**.

The ECG server **100** manages the content information of general contents which are provided using various kinds of service models and various kinds of recording media. The general contents are time-scheduled contents provided by a broadcast service, for example, non-time-scheduled contents provided by a communication service, for example, or provided by a recording medium and so on. The time-scheduled contents include contents that have been provided in the past, contents that are currently being provided and contents that will be provided in the future.

Further, the ECG server **100** manages management information for managing specific contents with respect to each user (each portable terminal **200**). The specific contents are contents selected by a user as a target of processing, contents recorded in recording media and registered by a user and so on, for example. The management information contains a content ID that allows identification of the content and information that allows identification of the processing device **300** capable of processing the content. Furthermore, the ECG server **100** manages history information for managing the content and the unit information selected by a user as a target of processing with respect to each user (each portable terminal **200**) and also manages preference information generated for each user based on the history information. The history information is information containing the content ID and information (designated device ID) that allows identification of the processing device **300** which has processed the content, or the unit ID.

The device control server **400** is operated and managed by a manufacturer of the processing device **300** which is indirectly controlled by the portable terminal **200**, a service provider that provides a content processing service or the like, for example. The device control server **400** is the device control server **400** that provides a content processing service using the processing device **300** manufactured by a manufacturer A, the device control server **400** that provides a content processing service using the processing device **300** manufactured by a manufacturer B, the device control server **400** that provides a content processing service using the processing device **300** manufactured by various manufacturers and so on, for example.

In the above content processing system, a desired processing device **300** is designated among the processing devices **300** registered in the content processing system by a user through the portable terminal **200**. If the processing device **300** is designated, based on the device information of the designated processing device **300** (designated device **300**) that is managed by the device control server **400**, the ECG server **100** extracts the content which can be processed by the designated device **300** from the contents corresponding to the content information and the management information for each user, which are managed within the ECG server **100**. The ECG server **100** then creates a content list including the extracted content based on the preference information of a user and transmits it to the portable terminal **200**, and the portable terminal **200** displays the content list as a selection menu.

The portable terminal **200** transmits a processing request on the content (selected content) selected by a user based on the selection menu to the ECG server **100**. The ECG server **100** transmits the processing request on the selected content to the designated device **300**, and the designated device **300** performs processing on the selected content, such as viewing, recording, reproduction, viewing reservation and recording reservation, for example, in response to the processing request. Then, the ECG server **100** manages the selection history information of contents with respect to each user and manages the preference information of each user based on the history information.

The ECG server **100** provides the unit information of the content to the portable terminal **200** and, selectively, to the processing device **300** together with or separately from the processing on the selected content, and the portable terminal **200** and the processing device **300** display or reproduce the unit information, thereby letting a user browse the content information and the related information. Then, the ECG server **100** manages the selection history information of unit information with respect to each user and manages the preference information of each user based on the history information.

FIGS. **3** to **6** are block diagrams showing the primary functional configurations of the ECG server **100**, the portable terminal **200**, the processing device **300** and the device control server **400**, which constitute the content processing system.

Configuration of the ECG Server **100**

FIG. **3** is a block diagram showing the primary functional components of the ECG server **100**. As shown in FIG. **3**, the ECG server **100** includes a content information storage portion **102**, a management information storage portion **104**, a unit information storage portion **106**, a history information storage portion **108**, a preference information storage portion **110**, a designated device information receiving portion **112**, a device information receiving portion **114**, a content selection information transmitting/receiving portion **116**, a processing request transmitting/receiving portion **118**, a search condition receiving portion **120**, a content information extracting portion **122**, a content list processing portion **124**, a unit information processing portion **126**, a management information processing portion **128**, a registration processing portion **130**, a storage portion **132** and a control portion **134**. FIG. **3** shows the primary functional components which are particularly related to the content processing system, of the functional components of the ECG server **100**.

The content information storage portion **102** stores the content information containing a unit ID that allows identification of the unit information of the content to be processed. The management information storage portion **104** stores the management information that allows identification of the specific content managed with respect to each user of the portable terminal **200**. The unit information storage portion **106** stores the unit information containing the content information and, selectively, the related information related to the content information in association with the content. The history information storage portion **108** stores a selected content ID that allows identification of the selected content as the history information with respect to each portable terminal **200**. The preference information storage portion **110** stores the preference information generated based on the history information with respect to each portable terminal **200**.

The designated device information receiving portion **112** receives a designated device ID that allows identification of the processing device **300** to perform content processing from the portable terminal **200**. The device information receiving portion **114** receives the device information that can specify the content processing executable by the designated device **300** from the device control server **400**. The content selection information transmitting/receiving portion **116** receives the selected content ID that allows identification of the selected content selected based on the content list from the portable terminal **200** and transmits it to the designated device **300** via the device control server **400**. The processing request transmitting/receiving portion **118** receives a processing request indicating the content processing to be performed on the selected content from the portable terminal **200** and transmits it to the designated device **300** via the device control server **400**. The search condition receiving portion **120** receives a search condition of a registration content to be registered as the specific content to be managed with respect to each user of the portable terminal **200** from the portable terminal **200**.

The content information extracting portion **122** is a functional portion that extracts the content information of the content which can be processed by the designated device **300** based on the device information from the content information storage portion **102** and extracts the content information of the content, among the specific contents managed with respect to each user of the portable terminal **200**, which can be processed by the designated device **300** based on the device information and the management information from the content information storage portion **102**. The content list processing portion **124** is a functional portion that creates a content list containing the contents corresponding to the extracted content information and transmits it to the portable terminal **200**.

The unit information processing portion **126** is a functional portion that extracts the unit information of the selected content from the unit information storage portion **106** based on the unit ID contained in the content information of the selected content and provides it to the portable terminal **200**. The management information processing portion **128** is a functional portion that stores the management information which allows identification of the selected content into the management information storage portion **104**. The registration processing portion **130** is a functional portion that performs various kinds of processing for the registration processing of the designated device **300**.

The storage portion **132** stores various data necessary for various kinds of processing by the ECG server **100**, programs for operating the ECG server **100** and so on. The control portion **134** is a functional portion that controls the other functional components to thereby control the overall function of the ECG server **100**.

In the above configuration, the content information storage portion **102**, the management information storage portion **104**, the unit information storage portion **106**, the history information storage portion **108**, the preference information storage portion **110** and the storage portion **132** are configured as storage units such as memory and hard disk. The designated device information receiving portion **112**, the device information receiving portion **114**, the content selection information transmitting/receiving portion **116**, the processing request transmitting/receiving portion **118**, the search condition receiving portion **120**, a part of the function of the content list processing portion **124**, a part of the function of the unit information processing portion **126** are configured as communication devices or the like that transmit and receive information to and from the portable terminal **200**, the processing device **300** and the device control server **400**. The content information extracting portion **122**, a part of the function of the content list processing portion **124**, a part of the unit information processing portion **126**, the management information processing portion **128**, the registration processing portion **130** and the control portion **134** are configured as processing control processors that perform various kinds of processing control, programs to be executed on the processing control processors or the like.

Configuration of the Portable Terminal **200**

FIG. **4** is a block diagram showing the primary functional components of the portable terminal **200**. As shown in FIG. **4**, the portable terminal **200** includes a designated device information transmitting portion **202**, a content list receiving portion **204**, a content selection information transmitting portion **206**, a processing request transmitting portion **208**, a search condition transmitting portion **210**, a registration information transmitting/receiving portion **212**, a unit information processing portion **214**, a display/reproducing portion **216**, an operation input portion **218**, a storage portion **220** and a control portion **222**. FIG. **4** shows the primary functional components which are particularly related to the content processing system, of the functional components of the portable terminal **200**.

The designated device information transmitting portion **202** transmits the designated device ID to the ECG server **100**. The content list receiving portion **204** receives the content list from the ECG server **100**. The content selection information transmitting portion **206** transmits the selected content ID to the designated device **300** via the ECG server **100** and the device control server **400**. The processing request transmitting portion **208** transmits the processing request to the designated device **300** via the ECG server **100** and the device control server **400**. The search condition transmitting portion **210** transmits the search condition of the registration content to the ECG server **100**. The registration information transmitting/receiving portion **212** transmits and receives registration information used for registration processing of the processing device **300** to and from the ECG server **100** and the processing device **300**.

The unit information processing portion **214** is a functional portion that acquires the unit information extracted as the unit information of the selected content based on the unit ID contained in the content information of the selected content from the ECG server **100** and processes the acquired unit information. The display/reproducing portion **216** displays or reproduces the content list and the unit information.

The operation input portion **218** allows a user to input various kinds of operation information. The storage portion **220** stores various data necessary for various kinds of processing by the portable terminal **200**, programs for operating the portable terminal **200** according to need and so on. The control portion **222** is a functional portion that controls the other functional components to thereby control the overall function of the portable terminal **200**.

In the above configuration, the designated device information transmitting portion **202**, the content list receiving portion **204**, the content selection information transmitting portion **206**, the processing request transmitting portion **208**, the search condition transmitting portion **210**, the registration information transmitting/receiving portion **212** and a part of the function of the unit information processing portion **214** are configured as communication devices or the like that transmit and receive information to and from the ECG server **100** and the processing device **300**. The display/reproducing portion **216** is configured as a liquid crystal panel or the like. The operation input portion **218** is configured as various kinds of operating devices such as keys and buttons. The storage portion **220** is configured as a storage unit such as memory and hard disk. A part of the function of the unit information processing portion **214** and the control portion **222** are configured as processing control processors that perform various kinds of processing control, programs to be executed on the processing control processors or the like.

Configuration of the Processing Device **300**

FIG. **5** is a block diagram showing the primary functional components of the processing device **300**. As shown in FIG. **5**, the processing device **300** includes a content selection information receiving portion **302**, a processing request receiving portion **304**, a registration information transmitting/receiving portion **306**, a device ID receiving portion **308**, a content processing portion **310**, a unit information processing portion **312**, a display/reproducing portion **314**, an operation input portion **316**, a storage portion **318** and a control portion **320**. FIG. **5** shows the primary functional components which are particularly related to the content processing system, of the functional components of the processing device **300**.

The content selection information receiving portion **302** receives the selected content ID from the portable terminal **200** via the ECG server **100** and the device control server **400**. The processing request receiving portion **304** receives the processing request from the portable terminal **200** via the ECG server **100** and the device control server **400**. The registration information transmitting/receiving portion **306** transmits and receives the registration information used for registration processing of the processing device **300** to and from the portable terminal **200** and the ECG server **100**. The device ID receiving portion **308** receives the device ID used for the portable terminal **200** to indirectly control the processing device **300** from the device control server **400**.

The content processing portion **310** performs processing on the selected content, such as viewing, recording, reproduction, viewing reservation and recording reservation, based on the received selected content ID and the received processing request. The unit information processing portion **312** acquires the unit information extracted as the unit information of the selected content based on the unit ID contained in the content information of the selected content from the ECG server **100** and processes the acquired unit information.

The display/reproducing portion **314** displays or reproduces the content and the unit information. The operation input portion **316** allows a user to input various kinds of operation information. The storage portion **318** stores various data necessary for various kinds of processing by the process-

ing device **300**, programs for operating the processing device **300** according to need and so on. The control portion **320** is a functional portion that controls the other functional components to thereby control the overall function of the processing device **300**.

In the above configuration, the content selection information receiving portion **302**, the processing request receiving portion **304**, the registration information transmitting/receiving portion **306**, the device ID receiving portion **308** and a part of the function of the unit information processing portion **312** are configured as communication devices or the like that transmit and receive information to and from the ECG server **100** and the device control server **400**. The display/reproducing portion **314** is configured as a display, a liquid crystal panel or the like. The operation input portion **316** is configured as various kinds of operating devices such as keys and buttons mounted on the processing device **300**, a remote controller included with the processing device **300** or the like. The storage portion **318** is configured as memory or the like. The content processing portion **310**, a part of the function of the unit information processing portion **312** and the control portion **320** are configured as processing control processors that perform various kinds of processing control, programs to be executed on the processing control processors or the like.

Configuration of the Device Control Server **400**

FIG. **6** is a block diagram showing the primary functional components of the device control server **400**. As shown in FIG. **6**, the device control server **400** includes a device information storage portion **402**, a device information transmitting/receiving portion **404**, a content selection information receiving portion **406**, a processing request receiving portion **408**, a device control ID receiving portion **410**, a registration information transmitting/receiving portion **412**, a registration processing portion **414**, a device ID extracting portion **416**, a storage portion **418** and a control portion **420**. FIG. **6** shows the primary functional components which are particularly related to the content processing system, of the functional components of the device control server **400**.

The device information storage portion **402** stores the device information of the processing device **300**. The device information transmitting/receiving portion **404** transmits and receives the device information to and from the ECG server **100** and the processing device **300**. The content selection information receiving portion **406** transmits and receives the content selection information to and from the ECG server **100** and the processing device **300**. The processing request receiving portion **408** transmits and receives the processing request to and from the ECG server **100** and the processing device **300**. The device control ID receiving portion **410** receives the device control ID used for the portable terminal **200** to indirectly control the processing device **300** from the ECG server **100**. The registration information transmitting/receiving portion **412** transmits and receives the registration information used for registration processing of the processing device **300** to and from the ECG server **100** and the processing device **300**.

The registration processing portion **414** is a functional portion that performs various kinds of processing for registration processing of the processing device **300**. The device ID extracting portion **416** is a functional portion that extracts the device ID stored in association with the device control ID. The storage portion **418** is a functional portion that stores various data necessary for various kinds of processing by the device control server **400**, programs for operating the device control server **400** and so on. The control portion **420** is a functional portion that controls the other functional components to thereby control the overall function of the device control server **400**.

In the above configuration, the device information transmitting/receiving portion **404**, the content selection information receiving portion **406**, the processing request receiving portion **408**, the device control ID receiving portion **410** and the registration information transmitting/receiving portion **412** are configured as communication devices or the like that transmit and receive various information to and from the ECG server **100** and the processing device **300**. The device information storage portion **402** and the storage portion **418** are configured as storage units such as memory and hard disk. The registration processing portion **414**, the device ID extracting portion **416** and the control portion **420** are configured as processing control processors that perform various kinds of processing control, programs to be executed on the processing control processors or the like.

Structure of Content Information and Unit Information

FIGS. **7**A and **7**B are explanatory views showing examples of content information and unit information, respectively, as ECG data.

The content information shown in FIG. **7**A contains the content ID "c9999", the title "professional style", the genre "documentary", the synopsis "introducing professionals of . . . ", the provision start date and time "2007/7/1 22:00:00", the end time "23:00:00", and the keywords "AAA work impression". Further, the content information contains the credits list made up of cast names and identification information as detailed information of the content. The content information further contains the unit ID "u5555" for referring to the unit information corresponding to the content.

The unit information shown in FIG. **7**B contains the unit ID "u5555" of the unit information, the content information and the related information related to the content information.

As the content information, detailed information of two casts, i.e. the cast names, the priorities, the information types, the presentation types and the references for detailed information (image URL, text), are contained. The priority and the presentation type of the detailed information indicate the display priority and the presentation type at the time of unit information browsing processing, which is described later, and the reference for detailed information indicates the location of reference data (image, text etc.).

As the related information, sales information of a product related to the content, i.e. the product name " . . . DVD package", the priority, the information type, the presentation type and the reference for detailed information (image related to the product, text, QR code), are contained.

The content information is provided by the content provider **500** and registered and managed as ECG data in the ECG server **100**. The unit information, which is information containing the content information provided by the content provider **500** and selectively containing the related information provided by the sponsor **600**, is associated with the content and managed as ECG data in the ECG server **100**. The content provider **500** and the sponsor **600** provide the ECG server **100** with update information of the content information and the related information, and the ECG server **100** updates the content information and the unit information managed thereby based on the update information.

The unit information is provided from the ECG server **100** to the portable terminal **200** and the processing device **300** having unit information browsing processing function, pro-

cessed by the portable terminal **200** and the processing device **300** and browsed by a user. In the unit information browsing processing, the content information and the related information contained in the unit information are displayed or reproduced based on the prescribed display priority, presentation type and so on, and various kinds of processing such as display of detailed information, purchase processing and payment processing are executed according to manipulation by a user.

Various processing in the content processing system are described hereinafter with reference to FIGS. **8** to **16**.

Device Registration Processing

FIG. **8** is a sequence chart showing the procedure of device registration processing. The device registration processing is processing for registering the processing device **300** in the content processing system.

When the portable terminal **200** receives an instruction for device registration processing from a user (Step S**102**), the portable terminal **200** transmits a processing request for device registration processing to the ECG server **100** (S**104**). Receiving the processing request, the ECG server **100** requests the portable terminal **200** to transmit a terminal ID that allows identification of the portable terminal **200**, such as an access destination on a communication network and a product number (S**106**), and the portable terminal **200** transmits its terminal ID to the ECG server **100** (S**108**). Receiving the terminal ID, the ECG server **100** generates a device control ID and stores the device control ID in association with the access destination of a specific device control server **400** and the terminal ID (S**110**). The specific device control server **400** is the device control server **400** that registers the processing device **300** to be controlled indirectly by the portable terminal **200**, and it may be specified by the ECG server **100** or specified in advance by a user of the portable terminal **200**.

The ECG server **100** transmits the device control ID to the specific device control server **400** (S**112**). Receiving the device control ID, the device control server **400** generates a password to be used for registration of the processing device **300**, stores the password in association with the device control ID (S**114**), and transmits the device control ID and the password to the ECG server **100** (S**116**). Receiving the device control ID and the password, the ECG server **100** transmits the device control ID, the password, and the access destination of the device control server **400** stored in association with the device control ID to the portable terminal **200** (S**118**). Receiving the device control ID, the password and the access destination of the device control server **400**, the portable terminal **200** transmits the received information to the processing device **300** (S**120**).

Receiving the device control ID, the password and the access destination of the device control server **400**, the processing device **300** accesses the device control server **400** to register the processing device **300** based on the access destination of the device control server **400** and transmits the device control ID, the password and the device information of the processing device **300** (S**122**). The device information of the processing device **300** is identification information (device name etc.) of the processing device **300** and information for specifying the processing function (e.g. viewing function, recording function, reproducing function, available service model and recording media etc.) of the processing device **300**. Receiving the device control ID, the password and the device information, the device control server **400** verifies the received device control ID and the password against the stored device control ID and the password (S**124**). If the verification result is positive, the device control server **400** generates a device ID and stores the device ID in association with the device control ID, the access destination of the processing device **300** and the device information of the processing device **300** (S**126**), thereby registering the processing device **300** in the content processing system. Then, the device control server **400** transmits the device ID to the processing device **300** (S**128**), and the processing device **300** stores the device ID (S**130**).

It is feasible to associate the terminal ID of one portable terminal **200** with the device IDs of a plurality of processing devices **300**, or associate the terminal IDs of a plurality of portable terminals **200** with the device ID of one processing devices **300**, using the device control ID. A user may register the processing device **300** in a plurality of device control servers **400** using the portable terminal **200**.

By the above procedure, the processing device **300** is registered in the content processing system by the portable terminal **200**, thereby enabling indirect control of the processing device **300** by the portable terminal **200**. Consequently, a user can make the processing device **300** perform various processing as described below, for example, with use of the portable terminal **200**.

Content Registration Processing

The procedure of content registration processing is described hereinafter with reference to FIG. **9** and FIGS. **10**A to **10**C. FIG. **9** is a sequence chart showing the procedure of content registration processing, and FIGS. **10**A to **10**C are explanatory views showing examples of the operation menu displayed on the portable terminal **200** during content registration processing. The content registration processing is processing for registering particular contents recorded in recording media and the processing device **300** managed by a user in the ECG server **100**.

When the portable terminal **200** receives an instruction for content registration processing from a user (S**132**), the portable terminal **200** displays a device designation list that designates the processing devices **300** registered by the device registration processing as shown in FIG. **10**A. The portable terminal **200** may acquire the device designation list from the ECG server **100** and display it or may store information necessary for creating the device designation list in advance and then read the information and create and display the device designation list. In the case of acquiring the device designation list from the ECG server **100**, the portable terminal **200** transmits a transmission request for the device designation list and the terminal ID to the ECG server **100** (S**134**), and the ECG server **100** acquires the device information of the processing device **300** from the device control server **400** based on the device control ID or the like stored in association with the terminal ID and creates the device designation list (S**136** to S**144**), and provides it to the portable terminal **200** (S**146**). If the device designation list is displayed on the portable terminal **200** (S**148**), a user designates the processing device **300** capable of processing the content to be registered (registration content) by manipulating keys **252** or the like (S**150**). The processing device **300** capable of processing the registration content may be designated as a plurality of processing devices **300**. When creating the device designation list, the device control server **400** may access the processing device **300** and check the status of the processing device **300** to thereby create the device designation list that includes only the processing devices **300** which are confirmed to be in the executable status of the content processing (e.g. power is on etc.).

After the processing device **300** is designated, the portable terminal **200** prompts a user to designate search conditions to be used for content search, such as a type, a title, a keyword and, selectively, a service model of the registration content, as shown in FIG. **10**B (S**152**). After the search conditions are designated (S**154**), the portable terminal **200** transmits a request for content search, the terminal ID and the search conditions to the ECG server **110** (S**156**). In the example shown in FIG. **10**B, the registration content type "DVD" and the title "SNAKE-MAN" are designated as the search conditions. If the information allowing identification of the content, such as a product number, a product code and a QR code, is contained in the identification information or the attribute information of the content, such information may be designated as the search condition.

Receiving the search request, the ECG server **100** extracts the content information matching the search conditions from the content information managed thereby (S**158**), creates a designation list including the identification information (title etc.), the attribute information and so on contained in the content information (S**160**), and transmits it to the portable terminal **200** (S**162**). Receiving the designation list, the portable terminal **200** displays the designation list as shown in FIG. **10**C (S**164**), and a user designates the registration content from the designation list (S**166**). In the example shown in FIG. **10**C, the designation list including "SNAKE-MAN1", "SNAKE-MAN2" and "SNAKE-MAN3", which are the contents matching the search conditions, is displayed. If the content corresponding to the registration content is not included in the designation list, a user designates "change search condition" and then designates search conditions again.

After the registration content is designated, the portable terminal **200** transmits a processing request for content registration processing, the terminal ID, the content ID contained in the corresponding content information and a designated device ID allowing identification of the designated processing device **300** (designated device **300**) to the ECG server **100** (S**168**). Receiving the processing request, the ECG server **100** stores the content ID and the designated device ID and, if needed, management information containing identification information in association with the terminal ID (S**170**).

A user can thereby register the content as the specific content to be managed with respect to each user. Then, a user can select a desired content from the general contents and the specific content and cause the content processing system to perform the content processing and the unit information browsing processing, as described in detail later.

Content Selection Processing

The procedure of content selection processing is described hereinafter with reference to FIG. **11** and FIGS. **12**A and **12**B. FIG. **11** is a sequence chart showing the procedure of content selection processing, and FIGS. **12**A and **12**B are explanatory views showing examples of the operation menu displayed on the portable terminal **200** during content selection processing. The content selection processing is processing for selecting the content on which the content processing and the unit information browsing processing are to be performed.

When the portable terminal **200** receives an instruction for content selection processing (S**172**), the portable terminal **200** displays the device designation list as in the case of the content registration processing, and a user designates the processing device **300** (designated device **300**) from the device designation list (S**174**).

The portable terminal **200** transmits a transmission request for a content list, the terminal ID and the designated device ID to the ECG server **100** (S**176**). The ECG server **100** specifies the device control ID corresponding to the designated device **300** and the access destination of the device control server **400** based on the terminal ID and the designated device ID (S**178**). The ECG server **100** accesses the device control server **400** and transmits a transmission request for device information and the device control ID (S**180**). The device control server **400** extracts the device information of the designated device **300** stored in association with the device control ID (S**182**) and transmits it to the ECG server **100** (S**184**).

Receiving the device information, the ECG server **100** creates a content list including the content that can be processed by the designated device **300** based on the content information, the management information and the device information managed by the ECG server **100**. The ECG server **100** first specifies the content processing executable by the designated device **300** based on the device information (S**186**).

If the designated device **300** is capable of processing (acquiring) the contents provided by various kinds of service models, the ECG server **100** specifies the available type of contents, such as contents of a terrestrial broadcasting, contents of BS broadcasting, contents of CS broadcasting, VOD contents and internet contents, for example (S**188**). Further, if the designated device **300** is capable of processing recorded contents recorded in the designated device **300**, contents recorded in recording media and so on, the ECG server **100** specifies the available type of contents, such as recorded contents, DVD, CD and magnetic tapes, for example (S**188**).

If the available type of contents is specified, the ECG server **100** extracts the content that can be processed by the designated device **300** from the content information and the management information managed by the ECG server **100** (S**190**).

In the case of extracting a general content, the ECG server **100** specifies the content information containing the attribute information (a service model and a recording medium type) in conformity to the available type of contents among the content information managed by the ECG server **100**, thereby extracting the relevant content. When extracting a time-scheduled content, the ECG server **100** extracts the content based on scheduling information contained in the content information in addition to the attribute information. On the other hand, in the case of extracting a particular content, the ECG server **100** specifies the content information of the content corresponding to the content ID based on the content ID contained in the management information and then extracts the content in the same manner as in the case of extracting the general content.

The ECG server **100** then creates the content list including the identification information (a content ID, a title etc.) contained in the content information of the extracted content and, when needed, the scheduling information (a provision channel, provision date and time etc.) and so on (S**192**), and transmits the created content list and the device information of the designated device **300** to the portable terminal **200** (S**194**). In the content list, the contents are classified according to a content type, provision date and time, a genre and so on, for example, based on the attribute information contained in the content information of the extracted content, and further according to preference information of a user.

The above-described content list is made up of the contents serving as the targets of the content processing by the processing device **300**. At this time, the ECG server **100** may

create the content list that includes the contents serving as the targets of the unit information browsing processing, which is described later. In this case, the ECG server **100** extracts the content corresponding to the content ID and the content corresponding to the unit ID from the content information managed by the ECG server **100** based on the content ID and the unit ID contained in the history information of a user, as described in detail later. Then, the ECG server **100** creates the content list that includes the identification information (a content ID, a title etc.) contained in the content information of the extracted content and so on and transmits the created content list to the portable terminal **200**. A user can thereby select desired unit information from the content list based on the user's history information and browse it.

Because the unit information browsing processing is executed by the portable terminal **200** having the unit information browsing processing function without depending on the processing device **300**, the ECG server **100** may create the content list including the contents not dependent on the processing device **300**.

Receiving the content list, the portable terminal **200** displays the selection menu as shown in FIGS. **12**A and **12**B, for example (S**196**). The selection menu is composed of a classification information display region **254** to display the classification information of contents and a content information display region **256** to display content information. In the classification information display region **254**, the classification information of contents, such as contents of a specific type, currently provided contents, recommended contents of this week, contents belonging to a specific genre and contents for the unit information browsing processing, for example, are displayed (in FIGS. **12**A and **12**B, the classification information is displayed in simplified form such as "A", "B" and "C"). In the content information display region **256**, the identification information (title etc.) of the classified content and, when needed, the scheduling information are displayed. Then, according to the selection of the classification information, the identification information of the contents corresponding to the selected classification information is displayed in the content information display region **256**.

In the example shown in FIG. **12**A, the content information "A1", "A2", . . . of the contents corresponding to the selected classification information "A" are sequentially displayed at given time intervals in the content information display region **256**. Then, if given manipulation such as manipulation of a specific key **252** or manipulation of the display region is performed in the state where the content information is displayed, the content corresponding to the displayed content information is selected.

In the example shown in FIG. **12**B, the content information "A1" to "A15" of the contents corresponding to the selected classification information "A" are displayed in the content information display region **256**. The number of displayed content information is a predetermined number or less (which is nine in the example shown in FIG. **12**B). If the number of the content information of the contents corresponding to the selected classification information is larger than the predetermined number, the predetermined number of content information "A1" to "A9" are displayed firstly, and, after a given period of time, the rest of the content information "A10" to "A15", the number of which is equal to or less than the predetermined number, are displayed.

Then, in the case where the portable terminal **200** has a touch panel, if the display region of specific content information on the touch panel is touched in the state where the content information is displayed, the content corresponding to the specific content information is selected (S**204**). If the content is selected, the content ID of the selected content included in the content list is specified as a selected content ID.

On the other hand, in the case where the portable terminal **200** does not have a touch panel, the content information are arranged and displayed in the content information display region **256** so as to correspond to the arrangement of the operation keys **252** (e.g. "1" to "9") of the portable terminal **200**. Then, if a given key **252** is manipulated in the state where the content information is displayed (for example, the key "8" is manipulated when selecting the content "A8" in the state shown in FIG. **12**B), the content corresponding to the content information placed corresponding to the position of the manipulated key **252** is selected. A user can thereby select the content easily by a simple manipulation based on the classification information.

In the case where the content information of the content that is time-scheduled and currently provided is displayed, when it becomes necessary to update the display of the selection menu as time elapses, the display is updated based on the scheduling information contained in the content information. In this case, if the provision end time of the content corresponding to the displayed content information comes or is approaching, the portable terminal **200** accesses the ECG server **100** and acquires the content information of the content to which the subsequent scheduling time period is assigned based on the scheduling information of the content to be updated (the content whose provision end time comes or is approaching) (S**198**, S**200**). Then, the portable terminal **200** updates the content list and also updates the display of the selection menu (S**202**).

A user can thereby use the content and the unit information by selecting the content using the portable terminal **200**, without depending on a variety of contents and various kinds of processing devices **300**. Because this eliminates the need for a user to make manipulation for each processing device **300** and further a manipulation method is unified, a user does not feel burdensome.

Content Processing

The procedure of content processing is described hereinafter with reference to FIG. **13** and FIG. **14**. FIG. **13** is a sequence chart showing the procedure of content processing and unit information browsing processing. FIG. **14** is an explanatory view showing an example of the operation menu displayed on the portable terminal **200** during content processing. The content processing is processing performed on the content by the processing device **300**, such as viewing, recording, reproduction, viewing reservation and recording reservation, for example.

If the content is selected, the portable terminal **200** displays a processing designation list that shows the processing which can be performed on the selected content by the designated device **300** according to need based on the device information and the content information as shown in FIG. **14** (S**212**). For example, the portable terminal **200** displays the processing designation list when a plurality of processing, such as viewing, recording, viewing reservation and recording reservation, can be performed on the selected content by the designated device **300** according to the combination of the designated device **300** and the selected content. On the other hand, the portable terminal **200** does not display the processing designation list when the processing to be performed on the selected content by the designated device **300**, such as reproduction of the recorded content, is specified according to the combination of the selected content and the designated

device **30**, for example. Alternatively, the portable terminal **200** may display the processing designation list including the unit information browsing processing regardless of whether the processing by the designated device **300** is specified with respect to the selected content. After the processing designation list is displayed, a user designates the content processing or the unit information browsing processing for the selected content (S**214**). In the case where the processing by the designated device **300** is predicted in some measure, such as when the currently provided content is selected for the designated device **300** having the viewing function, when the content to be provided in the future is selected for the designated device **300** having the recording reservation function and when the content recorded in a recording medium managed by a user is selected for the designated device **300** having the reproduction function, those processing may be designated automatically instead of displaying the processing designation list.

After the processing to be performed on the selected content is designated, the portable terminal **200** transmits a processing request indicating the designated processing, the terminal ID, the designated device ID and the selected content ID to the ECG server **100** (S**216**). Receiving the processing request, the ECG server **100** specifies the device control ID and the access destination of the device control server **400** stored in association with the terminal ID based on the terminal ID and the designated device ID (S**218**) and transmits the device control ID, the selected content ID and the processing request to the device control server **400** (S**220**). On the other hand, if the unit information browsing processing is selected, the portable terminal **200** performs the unit information browsing processing, which is described later.

Receiving the processing request for the content processing, the device control server **400** specifies the device ID and the access destination of the designated device **300** stored in association with the device control ID based on the received device control ID (S**222**). Then, the device control server **400** transmits the processing request to the designated device **300** based on the access destination of the designated device **300**. Receiving the processing request, the designated device **300** transmits the status information indicating the feasibility of the processing to the device control server **400**.

The device control server **400** checks the status information, and if it receives positive status information, the device control server **400** transmits the access destination of the designated device **300** to the ECG server **100** (S**224**). On the other hand, if it receives negative status information or fails to receive the status information after a certain period of time has elapsed, the device control server **400** gives notification to the ECG server **100**. In such a case, the ECG server **100** checks the existence of another device control ID stored in association with the terminal ID and if another device control ID is found, it accesses the device control server **400** having the device ID associated with the device control ID. Then, the ECG server **100** refers to the device information of an alternative processing device **300** having another device ID stored in association with the found device control ID, and if the alternative processing device **300** satisfies the processing request, it transmits the processing request to the alternative processing device **300** rather than to the designated device **300**. Before accessing the alternative processing device **300**, the ECG server **100** may give notification to the portable terminal **200** and confirm the access with a user of the portable terminal **200**.

If the device control server **400** receives positive status information from the alternative processing device **300**, the device control server **400** transmits the access destination of the alternative processing device **300**, instead of the designated device **300**, to the ECG server **100** as a target of indirect control by the portable terminal **200**. On the other hand, in the case where the ECG server **100** does not receive positive status information from any of the processing devices **300** that satisfy the processing request, the ECG server **100** gives notification to the portable terminal **200** and notifies a user that the processing designated by the processing request is not executable. The following description is given on the assumption that the case where positive status information is received from the designated device **300**.

Receiving the access destination of the designated device **300**, the ECG server **100** accesses the designated device **300** based on the access destination of the designated device **300** and transmits the selected content ID and the processing request and, if necessary, the scheduling information to the designated device **300** (S**226**). If the processing request corresponds to the processing such as viewing reservation and recording reservation of the content, the ECG server **100** specifies the scheduling information contained in the content information of the selected content from the content information managed by the ECG server **100** based on the selected content ID.

After transmitting the processing request, the ECG server **100** stores the management information containing the selected content ID and the designated device ID with respect to each user in the case of transmitting a specific processing request such as recording and recording reservation, for example (S**228**).

Further, the ECG server **100** stores the selected content ID and the attribute information and, if necessary, the designated device ID and the processing request as history information in log format, with respect to each user (S**230**). At this time, the ECG server **100** may store the information that is stored as the history information as management information according to need. In such a case, the ECG server **100** confirms whether to store the history information as management information with a user via the portable terminal **200** in a given operation after storing the history information, for example, and if the user confirms that, the ECG server **100** transmits the selected content ID and the designated device ID contained in the history information as the management information with respect to each user.

Then, the ECG server **100** generates preference information of a user based on the history information (S**230**). The preference information may be information based on the frequency to select the contents having the specific attribute information or information based on the trend analysis of the history information, for example. When creating the content list, the ECG server **100** extracts the contents that match the preference information and classifies the contents based on the preference information.

A user can thereby easily select the content on which the specific processing is performed from the content list created to include the contents managed with respect to each user. Further, a user can easily select the content matching the preference from the content list created based on the preference information with respect to each user. Because the history information and the preference information are managed in a centralized manner by the ECG server **100** without depending on the processing device **300**, a user does not feel inconvenience, which is different from the related art. Further, because the history information and the preference information are managed in a centralized manner, a user can select the content better matching his/her preference compared to the related art.

Receiving the processing request, the designated device **300** performs the content processing based on the processing request and, if needed, the scheduling information (S**232**). The designated device **300** performs processing such as viewing, recording, reproduction, viewing reservation and recording reservation, for example, on the selected content. When performing the processing on the content in a recording medium, the designated device **300** prompts a user to perform an operation such as setting of the recording medium according to need. In the case where the processing request corresponds to the processing such as viewing reservation and recording reservation, the designated device **300** notifies a processing result to the portable terminal **200** via the ECG server **100** upon completion of the content processing. A user can be thereby informed of the result of the content processing.

In addition to the content processing, the unit information browsing processing, which is described later, is performed in the portable terminal **200** and, selectively, in the processing device **300**.

By the above procedure, a user can cause the designated device **300** to perform the content processing using the portable terminal **200**.

Unit Information Browsing Processing

The procedure of unit information browsing processing is described hereinafter. The unit information browsing processing is processing for browsing the unit information of the content. The unit information browsing processing is performed between the ECG server **100** and the portable terminal **200** or the processing device **300**.

Between the ECG server **100** and the portable terminal **200**, browsing processing is performed during the content selection processing, the content processing which are described above, or content management processing and history processing which are described later. In this case, when the unit information browsing processing is designated (S**234**), the portable terminal **200** transmits a processing request for the browsing processing, the terminal ID and the selected content ID to the ECG server **100** (S**236**). Receiving the processing request, the ECG server **100** extracts the unit information of the selected content from the unit information managed by the ECG server **100** based on the selected content ID (S**238**) and provides the extracted unit information to the portable terminal **200** (S**240**). Receiving the unit information, the ECG server **100** executes the unit information browsing processing (S**242**).

On the other hand, between the ECG server **100** and the processing device **300**, browsing processing is performed during the content processing. In this case, the portable terminal **200** transmits a processing request for the browsing processing, the terminal ID, the selected content ID and the designated device ID to the ECG server **100** (S**236**). Receiving the processing request, the ECG server **100** extracts the unit information of the selected content from the unit information managed by the ECG server **100** based on the selected content ID (S**238**) and provides the extracted unit information to the processing device **300** (S**240**). Receiving the unit information, the designated device **300** executes the unit information browsing processing (S**244**).

Acquiring the unit information, the portable terminal **200** and the designated device **300** display or reproduce the content information and the related information contained in the unit information based on the given display priority and the presentation type. Then, if a given operation is performed in the state where the content information and the related information are displayed, the portable terminal **200** performs execution of various kinds of processing such as display of detailed information, purchase processing and payment processing, for example, with the ECG server **100**.

In the case of performing the browsing processing at the same time as the viewing/reproducing processing of the content, the portable terminal **200** may perform the browsing processing in link mode that switches the unit information to be browsed in conjunction with the switching of the content to be viewed/reproduced or in non-link mode that does not switch the unit information to be browsed in conjunction with the switching of the content to be viewed/reproduced. In such a case, when making a processing request for viewing/reproducing, the portable terminal **200** transmits a processing request for the browsing processing to the ECG server **100** when the link mode is selected and does not transmit a processing request when the non-link mode is selected, thereby performing the processing in accordance with the mode.

Because the unit information is updated according to the update of the content information and the related information, the latest unit information at the time when the ECG server **100** receives the processing request is provided to the portable terminal **200** and the designated device **300**. Thus, the unit information of the content provided in the past contains the information updated after the provision of the content, for example. Further, the unit information of the currently provided content contains the information updated immediately before the provision of the content, for example. Furthermore, the unit information of the content to be provided in the future contains the latest information at the time of receiving the processing request.

A user can thereby browse the latest unit information at the time of executing the browsing processing without depending on the content provision time. Specifically, during reproduction of the recorded content, a user can browse the latest advertising information that is contained in the unit information instead of browsing the past advertising information that is contained in the content. Further, in the case of the scheduled content, a user can browse the latest information that is updated immediately before the provision of the content instead of the information that has been generally prepared before the content provision time, such as a program guide magazine and a program guide of a newspaper.

Further, the unit information may be managed separately into normal unit information with no limitations on the information contained in the unit information and limited unit information with limitations on the information. The normal unit information contains the variety of content information and the related information described above. On the other hand, the limited unit information contains only the limited information such as a summary of the content and introduction of the content to be provided next, for example. The ECG server **100** may provide the normal unit information to the portable terminal **200** that manages the viewing processing on the relevant content as the history information of a user or the portable terminal **200** that is currently making the designated device **300** perform the viewing processing on the relevant content, and provide the limited unit information to the other portable terminals **200**.

The content provider **500** can thereby allow the ECG server **100** to provide different unit information to a user in accordance with the processing performed (being performed) on the content, and it is thus possible to prompt a user to view the content, for example, with the added value of the unit information.

After providing the ECG unit, if specific processing such as content purchase processing is performed by the portable

terminal **200** about the related information, for example, the ECG server **100** may store the content ID of the processed content as the management information with respect to each user (S**246**).

Further, the ECG server **100** stores the unit ID of the ECG unit, the attribute information and so on as the history information in log format with respect to each user (S**246**). Then, the ECG server **100** generates preference information of a user based on the history information (S**246**). The preference information may be information based on the frequency to select the ECG unit having the specific attribute information or information based on the trend analysis of the history information, for example. When creating the content list, the ECG server **100** extracts the content information of the contents that match the preference information and classifies the contents based on the preference information.

Content Management Processing

The procedure of content management processing is described hereinafter with reference to FIG. **15**. FIG. **15** is an explanatory view showing an example of the operation menu displayed on the portable terminal **200** during content management processing. The content management processing is processing for managing specific contents that are managed by the ECG server **100** with respect to each user.

Receiving an instruction for management processing from a user, the portable terminal **200** transmits a processing request and the terminal ID to the ECG server **100**. Receiving the processing request, the ECG server **100** displays the management menu containing identification information (a title etc.) and device information (a device name etc.) that are managed as management information as shown in FIG. **15**. If the management menu is displayed, a user selects a content and manipulates "browse" or "edit" button. If the "browse" button is manipulated, the portable terminal **200** performs the unit information browsing processing of the selected content. If the "edit" button is manipulated, the portable terminal **200** displays an editing menu or the like, and a user performs an editing operation such as deletion of management information, update of management information and addition of supplemental information. After the editing operation is performed, the portable terminal **200** transmits processing information containing the result of the editing operation to the ECG server **100**, and the ECG server **100** updates the management information of the user based on the processing information.

History Processing

The procedure of history processing is described hereinafter with reference to FIG. **16**. FIG. **16** is an explanatory view showing an example of the operation menu displayed on the portable terminal **200** during history processing. The history processing is processing for managing the history information stored with respect to each user by the ECG server **100** as the selection history of the content and the unit information selected to be processed by the portable terminal **200**. The ECG server **100** stores only the history information within a given update period, such as one week, and automatically deletes the old history information, thereby updating the history information.

Receiving a processing request for the content processing, the ECG server **100** stores the selected content ID, the attribute information and, if necessary, the designated device ID and the processing request as the history information in log format, in association with the terminal ID. On the other hand, receiving a processing request for the unit information browsing processing, the ECG server **100** stores the selected content ID, the attribute information and, if necessary, the processing request as the history information in log format, in association with the terminal ID.

Then, receiving an instruction for the history processing from a user, the portable terminal **200** transmits a processing request and the terminal ID to the ECG server **100**. Receiving the processing request, the ECG server **100** displays the management menu containing the identification information (a title etc.) of the content and the processing (or unit information browsing) date and time of the content that are stored as the history information as shown in FIG. **16**. After the management menu is displayed, the user selects the content (or unit information) and manipulates "browse", "save" or "delete" button. If the "browse" button is manipulated, the portable terminal **200** performs the unit information browsing processing of the selected content. If the "save" button is manipulated, the ECG server **100** saves the selected history information regardless of the update of the history information. If the "delete" button is manipulated, the ECG server **100** deletes the selected history information regardless of the update period.

Although a preferred embodiment of the present invention is described in the foregoing with reference to the drawings, the present invention is not limited thereto. It should be understood by those skilled in the art that various modifications, combinations, sub-combinations and alterations may occur depending on design requirements and other factors insofar as they are within the scope of the appended claims or the equivalents thereof.

What is claimed is:

1. An information providing apparatus included in a content processing system made up of the information providing apparatus, a portable information terminal, a content processing device and a device control apparatus, the device control apparatus, the content processing device, the information providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, the information providing apparatus comprising:

a storage device to store:

content information containing unit identification information for identifying unit information of a content to be processed, management information for identifying a specific content managed with respect to each user of the portable information terminal, and

the unit information containing the content information and, selectively, related information related to the content information in association with the content;

a first device information receiving device to receive first device information for identifying the content processing device as a designated device to perform content processing from the portable information terminal, wherein the first device information is based on and corresponds to second device information for identifying a content processing device that can be the designated device, the second device information provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device,

wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminal, the second device information is generated and associated to third device control information by the device control apparatus based on whether the third device information, in which the third device information is received by the device control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request to the information providing apparatus for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control apparatus against a device control apparatus identification information identifying the device control apparatus which is stored at the device control apparatus and provided from the information providing apparatus;

a second device information receiving device to receive the second device information, wherein the second device information further includes information for specifying content processing executable by the designated device from the device control apparatus;

a processor to:

extract the content information of the content processable by the designated device from the storage device based on the second device information, and extract the content information of the content processable by the designated device, among specific contents managed with respect to each user of the portable information terminal, from the storage device based on the second device information and the management information, and

create a content list including the contents corresponding to the extracted content information and transmit the content list to the portable information terminal;

a content selection information transmitting/receiving device to receive content selection information for identifying a selected content selected based on the content list from the portable information terminal and transmit the content selection information to the content processing device via the device control apparatus;

a processing request transmitting/receiving device to receive a processing request indicating content processing to be performed on the selected content from the portable information terminal and transmit the processing request to the designated device via the device control apparatus; and

wherein the processor is to extract the unit information of the selected content from the storage device based on the unit identification information contained in the content information of the selected content and provide the unit information to the portable information terminal, and

to store the management information for identifying the selected content into the storage device.

2. The information providing apparatus according to claim **1**, further comprising:

a search condition receiving device to receive a search condition of a registration content to be registered as a specific content managed with respect to each user of the portable information terminal from the portable information terminal, wherein

the processor extracts the content information matching the search condition from the storage device

and creates the content list including the content corresponding to the extracted content information and transmits the content list to the portable information terminal,

the content selection information transmitting/receiving device receives the content selection information for identifying the registration content selected based on the content list from the portable information terminal, and

the processor stores the management information for identifying the registration content into the storage device.

3. The information providing apparatus according to claim **2**,

wherein the storage device is to store the content selection information for identifying the selected content as history information with respect to each portable information terminal, wherein

the processor extracts the content information of the selected content from the storage device based on the history information and

creates the content list including the content corresponding to the extracted content information and provides the content list to the portable information terminal,

the content selection information transmitting/receiving device receives the content selection information indicating the selected content selected based on the content list from the portable information terminal, and

the processor portion extracts the unit information of the selected content from the storage device based on the unit identification information contained in the content information of the selected content and provides the unit information to the portable information terminal.

4. The information providing apparatus according to claim **3**,

wherein the storage device is to store preference information generated based on the history information with respect to each portable information terminal, and

the processor creates the content list including the content corresponding to the extracted content information based on the preference information and transmits the content list to the portable information terminal.

5. The information providing apparatus according to claim **3**, wherein

the storage device stores, as the unit information of the content, first unit information containing the content information and, selectively, the related information related to the content information and second unit information containing limited information compared to the first unit information in association with the content,

and stores the content selection information for identifying the selected content and a processing request indicating content processing performed on the selected content as the history information with respect to each portable information terminal, and

the processor extracts the first unit information of the selected content from the storage device and provides the first unit information to the portable information terminal if the processing request indicating given content processing as the content processing performed on the selected content is stored in the storage device, and extracts the second unit information of the selected content from the storage device and provides the second unit information to the portable information terminal if the

processing request indicating given content processing is not stored in the storage device.

6. The information providing apparatus according to claim **1**, wherein

the unit information stored in the storage device is updated as appropriate, and

the processor extracts the updated unit information of the selected content from the storage device and provides the updated unit information to the portable information terminal.

7. The information providing apparatus according to claim **1**, wherein

the processor extracts the unit information of the selected content from the storage device and provides the unit information to the designated device capable of displaying or reproducing the unit information.

8. A portable information terminal included in a content processing system made up of an information providing apparatus, the portable information terminal, a content processing device and a device control apparatus, the device control apparatus, the content processing device, the information providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, the information providing apparatus storing content information containing unit identification information for identifying unit information of a content to be processed, storing management information for identifying a specific content managed with respect to each user of the portable information terminal, and storing the unit information containing the content information and, selectively, related information related to the content information in association with the content, the portable information terminal comprising:

a designated device information transmitting device to transmit first device information for identifying the content processing device as a designated device to perform content processing to the information providing apparatus, wherein the first device information is based on and corresponds to second device information for identifying a content processing device that can be the designated device, the second device information provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device,

wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminal, the second device information is generated and associated to third device control information by the device control apparatus based on whether the third device information, in which the third device information is received by the device control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request to the information providing apparatus for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control apparatus against a device control apparatus identification information identifying the device control apparatus which is stored at the device control apparatus and provided from the information providing apparatus;

a content list receiving device to acquire a content list including the content corresponding to the content information of a content processable by a designated device and extracted based on the second device information indicating content processing executable by the designated device and the content corresponding to the content information of a specific content managed with respect to each user of the portable information terminal and processable by the designated device and extracted based on the second device information and the management information from the information providing apparatus;

a content selection information transmitting device to transmit content selection information for identifying a selected content selected based on the content list to the designated device via the information providing apparatus and the device control apparatus;

a processing request transmitting device to transmit a processing request indicating content processing to be performed on the selected content to the designated device via the information providing apparatus and the device control apparatus;

a processor to acquire unit information extracted as the unit information of the selected content based on the unit identification information contained in the content information of the selected content from the information providing apparatus and process the unit information; and

a display/reproducing device to display or reproduce the content list and the unit information.

9. The portable information terminal according to claim **8**, further comprising:

a search condition transmitting device to transmit a search condition of a registration content to be registered as a specific content managed with respect to each user of the portable information terminal to the information providing apparatus, wherein

the content list receiving device receives the content list including the content corresponding to content information extracted as the content information matching the search condition from the information providing apparatus, and

the content selection information transmitting device transmits the content selection information for identifying the registration content selected based on the content list to the information providing apparatus so as to store the management information for identifying the selected registration content into the information providing apparatus.

10. The portable information terminal according to claim **9**, wherein

the content selection information for identifying the selected content is stored as history information with respect to each portable information terminal in the information providing apparatus,

the content list receiving device receives the content list including the content corresponding to content information extracted as the content information of the selected content based on the history information from the information providing apparatus, and

the content selection information transmitting device transmits content selection information for identifying the selected content selected based on the content list to the information providing apparatus,

the processor acquires unit information extracted as the unit information of the selected content from the information providing apparatus and processes the unit information, and

the display/reproducing device displays or reproduces the content list and the unit information.

11. The portable information terminal according to claim **10**, wherein

preference information generated based on the history information is stored with respect to each portable information terminal in the information providing apparatus, and

the content list receiving device receives the content list including the content corresponding to the extracted content information and created based on the preference information from the information providing apparatus.

12. The portable information terminal according to claim **8**, wherein

the display/reproducing device simultaneously displays the content information of a given number of contents, among the contents included in the content list, separated by common classification information, and

the content selection information transmitting device transmits the content selection information indicating the content selected by an operation of an operating portion corresponding to each of the given number of displayed contents to the information providing apparatus.

13. The portable information terminal according to claim **8**, wherein

the unit information is updated as appropriate by the information providing apparatus, and

the processor acquires unit information extracted as the updated unit information of the selected content from the information providing apparatus and processes the unit information.

14. A content processing device included in a content processing system made up of an information providing apparatus, a portable information terminal, the content processing device and a device control apparatus, the device control apparatus, the content processing device, the information providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, and designated by first device information as a designated device to perform content processing by the portable information terminal, wherein the first device information is based on and corresponds to second device information for identifying a content processing device that can be the designated device, the second device information provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device

wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminals, the second device information is generated and associated to third device control information by the device control apparatus based on whether the third device information, in which the third device information is received by the device control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control apparatus against a device control apparatus identification information identifying the device control apparatus which is stored at the device control apparatus and provided from the information providing apparatus, the information providing apparatus storing content information containing unit identification information for identifying unit information of a content to be processed and storing management information for identifying a specific content managed with respect to each user of the portable information terminal, the content processing device comprising:

a content selection information receiving device to receive content selection information for identifying a selected content selected by the portable information terminal based on a content list including the content corresponding to the content information of a content processable by the designated device and extracted based on the second device information indicating content processing executable by the designated device and the content corresponding to the content information of a specific content managed with respect to each portable information terminal and processable by the designated device and extracted based on the second device information and the management information from the portable information terminal via the information providing apparatus and the device control apparatus;

a processing request receiving device to receive a processing request indicating content processing to be performed on the selected content from the portable information terminal via the information providing apparatus and the device control apparatus; and

a processor to perform processing on the selected content based on the received content selection information and the received processing request.

15. The content processing device according to claim **14**, wherein

the information providing apparatus stores the unit information containing the content information and, selectively, related information related to the content information in association with the content, and

the processor is to acquire unit information extracted as the unit information of the selected content based on the unit identification information contained in the content information of the selected content from the information providing apparatus and process the unit information; and

the content processing device includes:

a display/reproducing device to display or reproduce the content and the unit information.

16. A device control apparatus included in a content processing system made up of an information providing apparatus, a portable information terminal, a content processing device and the device control apparatus, the device control apparatus, the content processing device, the information

providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, the information providing apparatus storing content information containing unit identification information for identifying unit information of a content to be processed and storing management information for identifying a specific content managed with respect to each user of the portable information terminal, the portable information terminal providing first device information for identifying a content processing device of the at least one content processing device as a designated device to the information providing apparatus, wherein the first device information is based on and corresponds to second device information identifying a content processing device that can be the designated device, the second device information provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device,

the device control apparatus comprising:

a storage device to store the second device information, wherein the second device information further includes information specifying content processing executable by the content processing device, wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminal, the second device information is generated and associated to third control device information by the device control apparatus based on whether the third device information, in which the third device information is received by the device control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request to the information providing apparatus for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control apparatus against a device control apparatus identification information identifying the device control apparatus which is stored at the device control apparatus and provided from the information providing apparatus;

a device information transmitting/receiving device to transmit and receive the second device information to and from the designated device designated as the content processing device to perform content processing by the first device information from the portable information terminal and the information providing apparatus;

a content selection information receiving device to transmit and receive content selection information for identifying a selected content selected by the portable information terminal based on a content list including the content corresponding to the content information of a content processable by the designated device and extracted based on the second device information of the designated device and the content corresponding to the content information of a specific content managed with respect to each portable information terminal and processable by the designated device and extracted based on the second device information and the management information to and from the information providing apparatus and the designated device; and

a processing request transmitting/receiving device to transmit and receive a processing request indicating content processing to be performed on the selected content to and from the information providing apparatus and the designated device.

17. A content processing system made up of an information providing apparatus, a portable information terminal, a content processing device and a device control apparatus, the device control apparatus, the content processing device, the information providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, wherein

the information providing apparatus includes:

a storage device to store:

content information containing unit identification information for identifying unit information of a content to be processed, management information for identifying a specific content managed with respect to each user of the portable information terminal, and

the unit information containing the content information and, selectively, related information related to the content information in association with the content;

a first device information receiving device to receive first device information for identifying the content processing device as a designated device to perform content processing from the portable information terminal, wherein the first device information is based on and corresponds to second device information for identifying a content processing device that can be the designated device, the second device information provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device,

wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminal, the second device information is generated and associated to third device control information by the device control apparatus based on whether the third device information, in which the third device information is received by the device control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request to the information providing apparatus for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control

apparatus against a device control apparatus identification information identifying the device control apparatus which is stored at the device control apparatus and provided from the information providing apparatus;

a second device information receiving device to receive the second device information, wherein the second device information further includes information for specifying content processing executable by the designated device from the device control apparatus;

a processor to:

extract the content information of the content processable by the designated device from the storage device based on the second device information, and extract the content information of the content processable by the designated device, among specific contents managed with respect to each user of the portable information terminal, from the storage device based on the second device information and the management information, and

create a content list including the contents corresponding to the extracted content information and transmit the content list to the portable information terminal;

a content selection information transmitting/receiving device to receive content selection information for identifying a selected content selected based on the content list from the portable information terminal and transmit the content selection information to the content processing device via the device control apparatus;

a processing request transmitting/receiving device to receive a processing request indicating content processing to be performed on the selected content from the portable information terminal and transmit the processing request to the designated device via the device control apparatus; and

wherein the processor is to extract the unit information of the selected content from the storage device based on the unit identification information contained in the content information of the selected content and provide the unit information to the portable information terminal, and

to store the management information for identifying the selected content into the storage device;

the portable information terminal includes:

a designated device information transmitting device to transmit the first device information to the information providing apparatus;

a content list receiving device to receive the content list from the information providing apparatus;

a content selection information transmitting device to transmit the content selection information to the designated device via the information providing apparatus and the device control apparatus;

a processing request transmitting device to transmit a processing request to the designated device via the information providing apparatus and the device control apparatus;

a second processor to acquire unit information extracted as the unit information of the selected content based on the unit identification information contained in the content information of the selected content from the information providing apparatus and process the unit information; and

a display/reproducing device to display or reproduce the content list and the unit information,

the content processing device includes:

a content selection information receiving device to receive the content selection information from the portable information terminal via the information providing apparatus and the device control apparatus;

a processing request receiving device to receive the processing request from the portable information terminal via the information providing apparatus and the device control apparatus; and

a third processor to perform processing on the selected content based on the received content selection information and the received processing request, and

the device control apparatus includes:

a second storage device to store the second device information of the content processing device;

a device information transmitting/receiving device to transmit and receive the second device information to and from the information providing apparatus and the designated device;

a content selection information receiving device to transmit and receive the content selection information to and from the information providing apparatus and the designated device; and

a processing request transmitting/receiving device to transmit and receive a processing request information to and from the information providing apparatus and the designated device.

18. A non-transitory recording medium recorded with a computer-readable program executable by a computer for causing an information providing apparatus to execute an information providing method, the information providing apparatus included in a content processing system made up of the information providing apparatus, a portable information terminal, a content processing device and a device control apparatus, the device control apparatus, the content processing device, the information providing apparatus and the portable information terminal external to one another, connectable through a communication network, to process a content by at least one content processing device using the portable information terminal via the information providing apparatus and the device control apparatus, the information providing method comprising the steps of:

storing content information containing unit identification information for identifying unit information of a content to be processed;

storing management information for identifying a specific content managed with respect to each user of the portable information terminal;

storing the unit information containing the content information and, selectively, related information related to the content information in association with the content;

receiving, at the information providing apparatus, first device information for identifying the content processing device as the designated device to perform content processing from the portable information terminal, wherein the first device information is based on and corresponds to second device information for identifying a content processing device that can be the designated device provided to the portable information terminal by the information providing apparatus, in which at the portable information terminal a device designation list is displayed indicating a content processing device indicated by the second device information as selectable as the designated device,

wherein, during a content processing device registration processing performed before the first device information is received at the information providing apparatus from the portable information terminal, the second device information is generated and associated to third device control information by the device control apparatus based on whether the third device information, in which the third device information is received by the device

control apparatus from the information providing apparatus and is generated by the information providing apparatus and stored at the information providing apparatus in association with an access destination of the device control apparatus and terminal identification information for identifying the portable information terminal at the information providing apparatus in response to a request to the information providing apparatus for the content processing device registration processing and receipt at the information providing apparatus of the terminal identification information from the portable information terminal, is verified by the device control apparatus against a device control apparatus identification information identifying the device control apparatus, which is stored at the device control apparatus and provided from the information providing apparatus;

receiving the second device information, wherein the second device information further includes information specifying content processing executable by the designated device from the device control apparatus;

extracting the content information of the content processable by the designated device from the stored content information based on the second device information, and extracting the content information of the content processable by the designated device, among specific contents managed with respect to each user of the portable information terminal, from the stored content information based on the second device information and the management information;

creating a content list including the contents corresponding to the extracted content information and transmitting the content list to the portable information terminal;

receiving content selection information for identifying a selected content selected based on the content list from the portable information terminal and transmitting the content selection information to the content processing device via the device control apparatus;

receiving a processing request indicating content processing to be performed on the selected content from the portable information terminal and transmitting the processing request to the designated device via the device control apparatus;

extracting the unit information of the selected content from the stored unit information based on the unit identification information contained in the content information of the selected content and providing the unit information to the portable information terminal; and

storing the management information for identifying the selected content.

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